JULY 13, 1998 VOLUME 15, NUMBER 28

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

Moss rolls on

Page 10.

The 'Net effect

ROBERT SAUNDERS

How the Internet is changing the face of business.

We all keep hearing about how the Internet is changing everything. Well, for some industries, it really is.

From new services that help truck dispatchers ensure every leg of a trip is fruitful, to discount airline ticketing and stock services that essentially cut out the middleman, the Internet is spawning new businesses and helping forward-thinking companies attract new customers at reduced cost.

But not everyone is jumping on board. The insurance industry, for example, is living up to its staid reputation — and it may pay the price.

Turn to page 45 for examples of how industries large and small are being reshaped by the Internet.

Sprint doubts own ION plans

Converged voice/data net relies on unlikely RBOC cooperation.

By David Rohde
Washington, D.C.

Sprint's super-efficient network capable of converging voice and data traffic over a single broadband pipe won't likely be coming to your doorstep anytime soon.

Statements filed by Sprint Corp. with the Federal Communications Commission and obtained by *Network World* reveal Sprint is not confident about obtaining the local access lines it needs to produce the Integrated On-Demand Network (ION).

In language that at times directly contradicted statements by executives at the ION launch last month, Sprint lawyers said they were "gravely concerned" about the carrier's ability to obtain digital subscriber line (DSL) local loops needed to reach businesses and homes.

ION, announced with much fanfare in June, is Sprint's new combined local and long-distance architecture (*NW*, June 8, page 1). The network is designed to concentrate a user's voice, data and Internet traffic through an ATM device on the customer premises. The traffic is then shipped over a broadband facility leased from a local car-

See **ION**, ***page 69***

Esrey

Get more online:

- **Details of Sprint Chairman Esrey's launch of ION**
- **Responses to ION from carrier executives**
- **Articles on convergence**

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www.nwfusion.com

Splashy spam start-up

By Paul McNamara
San Francisco

Backed by a who's who of Internet players, a San Francisco-based start-up is pledging to "end spam as we know it."

START-UP SPOTLIGHT

Bright Light Technologies, Inc., launched by a group of AOL expatriates, is expected to unveil a combination of server-side spam filtering and customized software update services in the coming weeks. The package will be pitched to ISPs and the Fortune 100.

Bright Light's "end spam" boast will undoubtedly be seen as audacious or naive by battle-weary spam fighters and the company's competitors. However, those familiar with Bright Light's ambitious plans and potent allies are convinced the undertaking holds significant promise.

According to sources, Bright Light's software and services

See **End spam**, ***page 16***

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800

Alteon out to tame IP

By Robin Schreier Hohman
San Jose, Calif.

Alteon Networks, Inc. thinks enterprise IP traffic is out of control.

That's why next week the company will introduce a switch that promises to let net administrators control, redirect and load balance IP traffic among routers, switches and servers.

The eight-port AceDirector 2 Fast Ethernet switch will let users direct any IP traffic — such as File Transfer Protocol (FTP) and HTTP — to specific routers, switches, firewalls and servers based on device availability and data priority level. The idea is to boost net performance by distributing the communications workload among multiple devices rather than overloading one box.

The switch, like other members of Alteon's AceDirector and AceSwitch families, can direct traffic to certain communications devices or servers based on

See **Alteon switches**, ***page 68***

It's goodbye Digital, howdy Compaq East

By Tim Greene and Marc Songini
Littleton, Mass.

B.J. Johnson is home again.

He is moving back into the same King Street office building in Littleton, Mass., where he started Digital Equipment Corp.'s network systems integration business 14 years ago, and will even be working on the exact same floor.

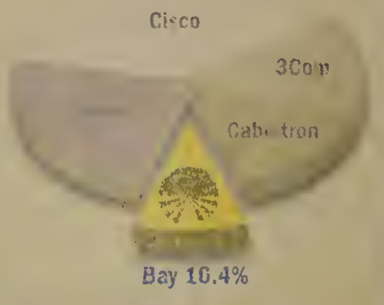
This time, though, he is establishing an East Coast network outpost for Compaq Computer Corp. in the form of the new Network and Access Communications (NAC) group. The

See **Compaq**, ***page 68***

SWITCHED ETHERNET MARKET SHARE

Bay Networks this week will enter the stackable 10/100M bit/sec switch market. See story, page 8.

- Total 1997 switched Ethernet market revenue: $4.7 billion



SOURCE: DELL'ORO GROUP, PORTOLA VALLEY, CALIF.

It's 1900.

Do you know where your e-mail is?

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11:59:59, 1999.

If your users are among the over ten million people who depend on non-Y2K-compliant e-mail systems, they're about to find themselves at the start of the wrong century. Millions of others have already discovered that their systems are behind the times.

Not that it's going to make you feel any better, but there's a reason. Many great systems, Lotus cc:Mail and Microsoft® Mail among them, were designed when e-mail was just a useful utility, and the year 2000 just a blip on the radar. They were never intended to be the critical center of corporate messaging and collaboration that e-mail has become today.

Sure, someone may develop a patch or write some code that will buy you some time to limp into the next century, but that's all you'll be buying. Time. Not capabilities.

So this may be a good time to get your entire company on the same messaging platform. There's a couple of ways to do it.

Alternative one: Yank it all out by the roots, data and all. Start from scratch. Install a completely new messaging infrastructure for your entire installed base and hope it works. Your basic IT nightmare.

Alternative two: Microsoft Exchange Server.

Microsoft Exchange lets you unify your company's messaging platforms. It connects every user around the clock. It connects devices from palmtops to workstations, from 16- and 32-bit PCs to PowerMacs. It connects you to messaging software with unlimited storage for unlimited volume. And, perhaps most important, it connects to the e-mail platforms your company already has—and lets your users keep their e-mail and data alive in the next century.

Exchange comes with built-in connectors to cc:Mail and Microsoft Mail. To Lotus Notes. To mainframe messaging. It supports every standard Internet protocol. And whatever Exchange connects, it enhances. So while your cc:Mail and Microsoft Mail users still keep their data and get their e-mail, they also begin to communicate and collaborate on a global basis. They get the task management, calendaring, contact management and collaboration tools of the Outlook™ 98 client. They can use Microsoft Office to create work, exchange work, collaborate on work. All on a unified platform.

Visit our Web site at www.microsoft.com/exchange/2000/ to order a Microsoft Exchange Server 5.5 evaluation kit. And see how you can get everyone and everything working in the same century.

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OVER THE EDGE?

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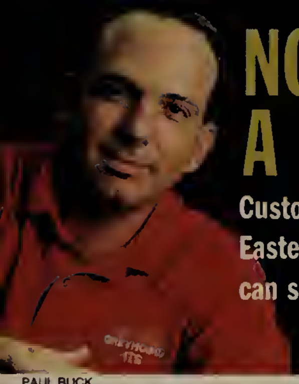
PAUL BUCK

NOVELL DELIVERS A WINNER

Customers such as Greyhound Lines' Phil Easter say Novell's NDS for NT offering can save money and time. Page 19.

CARRIERS TAKE THEIR CUT

But recent Sprint and MCI announcements are no home runs, according to columnist Thomas Nolle. Page 43.

HEAVY DUTY

Compatible Systems Corp. has added three new Intraport devices the company claims can handle large amounts of virtual private network traffic. Page 26.

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This Week

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Internet economics. *Network World* Editor in Chief John Gallant interviews Hal Varian, co-author of *Information Rules: A Strategic Guide to the Network Economy*. Varian sounds off on the business and economic issues that are shaping today's Internet. **DocFinder: 7956**

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News briefs, July 13, 1998

Sun knocks Microsoft on Java again

Sun Microsystems, Inc. is criticizing Microsoft Corp. over Java — again. A recent round of compliance tests on early versions of upcoming Microsoft Java products show additional Java incompatibilities, Sun officials said last week. Testing of the prerelease versions of two development tools — Software Developers Kit 3.0 and Visual J++ 6.0 — and Internet Explorer 4.0.1 turned up two new incompatibilities with the Java standard. According to Sun spokesperson Lisa Poulson:

- Microsoft has added new key words to the implementations, in violation of the Java language.
- Microsoft has tied its Java compiler to its Windows-specific Virtual Machine for Java. This means that code written using the Microsoft Java compiler can only run on Windows, Sun said.

Sun has accused Microsoft of trying to create its own flavor of Java, thus destroying the programming language's "write once, run anywhere" premise. Microsoft officials have denied that the company violated any part of the Java licensing agreement with Sun. Sun filed a breach of contract lawsuit last October against Microsoft, alleging tests revealed that the Internet Explorer 4.0 browser and Software Developers Kit for Java 2.0 were not fully Java compliant as required under the Java licensing agreement signed by the software giant.

Linux publishers blow off merger rumors

Amid media reports that Red Hat Software, Inc. and Caldera, Inc. — both publishers of Linux operating system bundles — were going to merge, the companies informed *Network World* that it isn't happening. Laura Kenner, communication manager for Caldera, stated "there's absolutely no truth to the rumor." Similarly, Melissa Trenkle London, Red Hat's media relations manager, said after some hearty laughter, "In general, it's gotten a lot attention, which is very exciting. At this point in time, there's nothing going on."

Williams, WorldCom mend the fence

Williams Communications and WorldCom, Inc. have settled a legal dispute that arose over the use of a key piece of a network Williams shares with WorldCom. Williams filed a suit in March in an Oklahoma district court alleging WorldCom had not followed terms of a 1994 contract that allowed Williams to buy capacity in WorldCom's fiber-optic network. Specifically, Williams retained one strand of fiber when it sold its network to WorldCom for $2.5 billion. WorldCom responded to Williams' legal action in May with a countersuit. The settlement permits Williams to buy, with restrictions until 2001, one strand of fiber on WorldCom's long-distance networks. The fiber will be used for video and Internet traffic and will not be used for fax or voice communications on the public switched network. When the restrictions expire, Williams will have the right to offer long-distance, data, voice and other services over the fiber.

Electronic commerce cooperation

IBM and Software AG last week said they plan to work together to help corporate software developers write electronic commerce applications. The companies' alliance will let users developing electronic commerce applications with Software AG's Bolero create Enterprise JavaBean components. The applications would then run in IBM mainframe environments using Software AG's CICS transaction server or its Component Broker. JavaBeans is Sun Microsystems, Inc.'s component model for the Java programming language. The first market-ready products resulting from IBM and Software AG joint development can be expected to hit the streets next year.

Software aims to bridge EDI/XML traffic

By Ellen Messmer

In a move that could be critical to the future of electronic commerce transactions, CommerceNet and the Data Interchange Standards Association (DISA) will soon announce technology that will let users mix and match existing EDI documents with emerging XML applications.

CommerceNet and DISA will release the equivalent of a software bridge between the X12 Electronic Data Interchange (EDI) format and the Web-based Extensible Markup Language (XML).

The bridge should enable EDI packages to incorporate XML data into EDI transactions and vice versa. The technology will open a migration path for corporations that want to use EDI to test XML transactions over the Web with their trading partners.

With this XML bridge, "we can move about 99% of the EDI structures into XML effectively," said Rik Drummond, president of the Fort Worth, Texas, consultancy The Drummond Group.

Defined over 25 ago years by the large petroleum, banking, transportation and retailing companies and the federal government, X12 EDI provides a rich suite of electronic forms and messages for shipping and purchasing that have been widely adopted by the Fortune 500 companies.

"But traditional EDI has been complex and expensive to implement," acknowledged Judy Kilpatrick, president of DISA, the ANSI-accredited standards body for X12 EDI. Large businesses such as Wal-Mart, Inc. and Chevron Corp. have cajoled many of their trading partners into using EDI, and the transportation industry lives by EDI.

Concocted somewhat as a replacement for EDI, XML is a format-neutral style-sheet language for the World Wide Web, created by the World Wide Web Consortium. The first version of XML was released earlier this year.

XML TERMINOLOGY

Document type definition:
A DTD is the encoded representation of a schema for document types such as purchase orders or catalog items.

Valid XML:
A valid XML document is one conforming exactly to the structure and required content defined by an associated DTD.

Well-formed XML:
A well-formed XML document is one which does not necessarily conform to a DTD but which does meet a pre-defined set of criteria within the XML specification.

XML lets users easily define content through special tags. This is done so that any processor, from browsers to special search agents or servers, can understand the meaning of content. If industry trading partners can agree on the specific structure for a business document, such as a purchase order, they can represent it encoded in a so-called XML-based document type definition (DTD). This will enable businesses to process Web-based documents in a more flexible way than EDI can.

With huge investments in EDI translation and mapping software, though, a critical question for the EDI business community is whether EDI software is going to work with XML at all.

"EDI is not going to just go away — there is too big an investment in it," commented Randall Whiting, president and CEO of CommerceNet, a Silicon Valley-based nonprofit organization with about 500 member companies and federal funding. "And one challenge in XML is a lot of DTDs will be required," Whiting said.

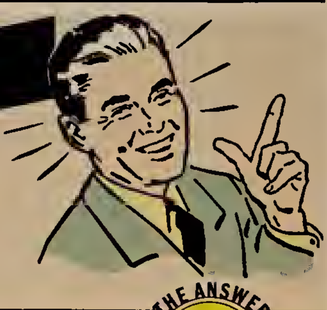
DISA and CommerceNet plan to release more than 10,000 XML DTDs that map easily to EDI, Drummond said. "We're also developing algorithms so you can take the X12 databases and develop XML structures automatically," he said. However, an EDI message of 1,000 characters might take 10,000 characters in XML.

Drummond said he hopes the high-tech community backing XML will make use of the XML/EDI software bridge from CommerceNet and DISA. "If we can't get the XML guys to use it, we'll be back where we were in 1975 in EDI, with everyone doing things differently," Drummond predicted.

Sun Microsystems, Inc., Microsoft Corp. and a host of smaller companies such as Interleaf, Inc. are pioneering XML applications, repositories and development tools, but these companies have largely remained outside traditional EDI development.

Big EDI users, such as the federal government, are closely following the XML work being done by CommerceNet and its allies. "CommerceNet is very much in the forefront of figuring out what really works," commented Marty Wagner, associate administrator for government IT and electronic commerce policies at the General Services Administration.

Kilpatrick said DISA is wrestling with the question of how far to go with XML, which was not part of her company's defined mission. "I think XML will be another form of EDI, in the broad sense," Kilpatrick said. "Will it eventually replace EDI? That's the question on the table." ■



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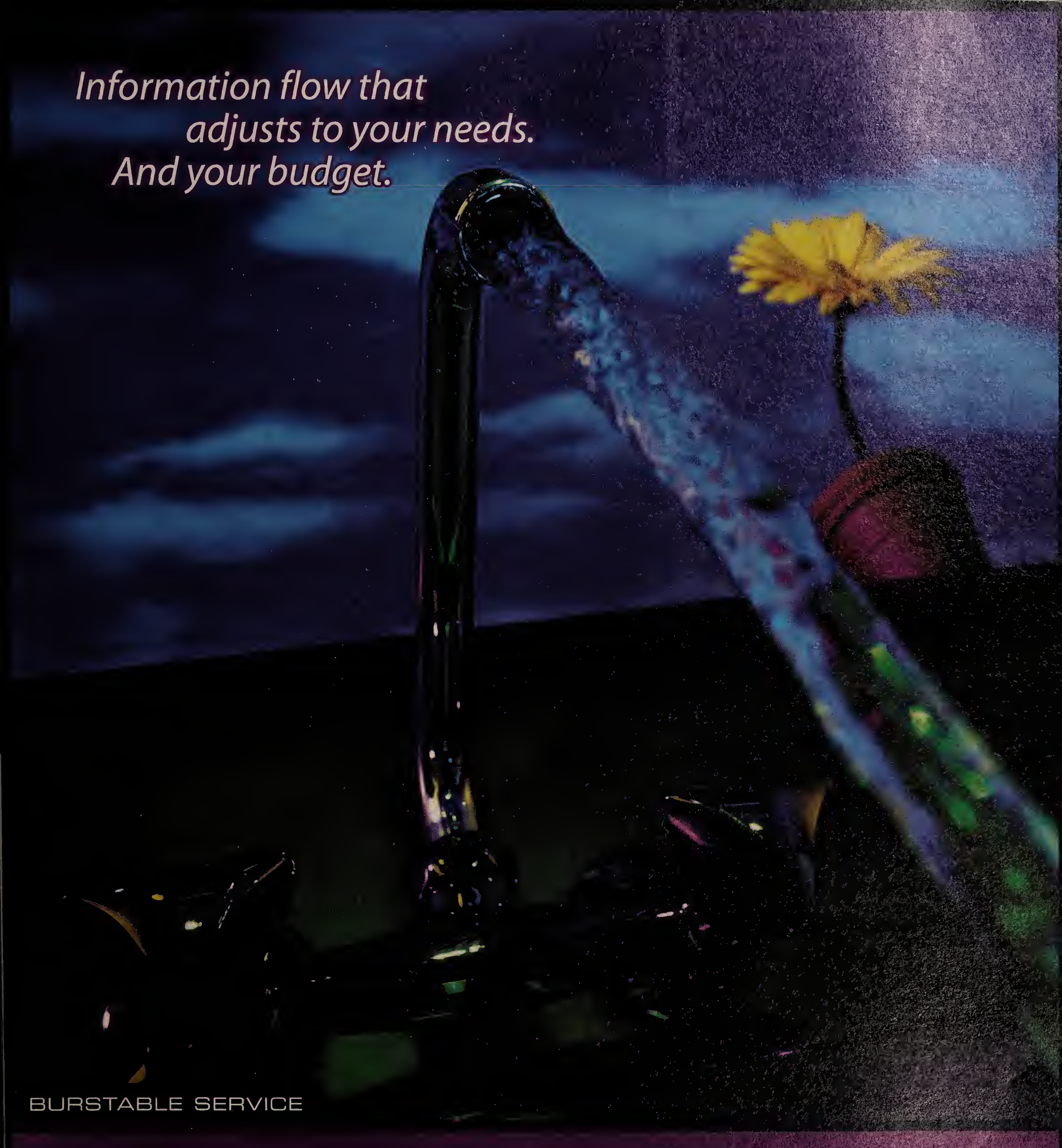
This week's question:

What was Inprise Corp.'s former name?



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Bay joins stackable 10/100 switch party

BayStack 450 switch line will compete with 3Com's SuperStack, Intel's 510T devices.

By Jim Duffy
Santa Clara, Calif.

Bay Networks, Inc. this week will jump into the stackable 10/100M bit/sec Ethernet switch market with an autosensing line of products designed to leapfrog those from rivals 3Com Corp. and Intel Corp.

The new 12- and 24-port BayStack 450 switches let users incrementally increase port density up to 224 10/100 ports in a single eight-unit stack, according to sources familiar with the new switches. That's about twice the port capacity available from 3Com's comparable SuperStack II 1100 and 3300 switches, which can only be stacked four units high.

The new BayStack 450 line represents the next generation of Bay's popular BayStack 350 10/100 Layer 2 switch line, which is not stackable (*NW,* Feb. 9, page 37). Bay will continue to sell the BayStack 350 line as a low-priced alternative to the 450 line for small and mid-size business, sources said. Bay declined comment.

Each BayStack 450 switch features an expansion slot on the front that can house a four-port 10/100Base-TX module, a two-port 100Base-FX card or a single-port 1000Base-SX or LX Gigabit Ethernet board, the sources said. On the back, each BayStack 450 has another expansion slot for the cascade, or stacking, module.

Customers can stack twice as many BayStack 450 switches as they can 3Com SuperStack IIs, and with SuperStack IIs, users lose a SuperStack expansion slot when they stack switches. This is a slot that might otherwise hold more 10/100M bit/sec ports.

The BayStack 450 sports a 2.5G bit/sec backplane, supports 12,000 media access control (MAC) addresses and can forward 3 million packet/sec, sources said. It features IEEE 802.1p for traffic priority, 802.1Q for virtual LAN (VLAN) trunking, access security capabilities, and Internet Group Management Protocol (IGMP) snooping for multicast support.

Users can configure up to 64 port- or protocol-based VLANs with the new Bay switches, sources said.

By contrast, Intel's 510T switches only support 8,164 MAC addresses and a 571K packet/sec forwarding rate. They do not feature 802.1p or 802.1Q, nor do they currently support IGMP snooping. But the Intel switches do support up to 128 port-, MAC- or protocol-based VLANs, and IP multicast is expected be added to the 510T by year-end.

The BayStack 450 is also expected to go up against Ethernet switch market leader Cisco Systems, Inc.'s Catalyst 2900 series of 10/100M bit/sec switches, which are not stackable.

Analysts said the new Bay switches will appeal to Layer 2 purists.

"If you don't require any Layer 3 forwarding [in the wiring closet], the 450 is your box," said Esmeralda Silva, an analyst at International Data Corp. in Framingham, Mass. "If you talk to customers, they're not willing to pay the price that's associated with doing forwarding on every port. Secondly, I just don't think they want to introduce that [complexity] into their wiring closet."

Users that do want Layer 3 switching closer to desktops or widespread policy-based networking can opt for Bay's Accelar 1050 wiring closet switch, Silva said. But even some Bay users sticking with Layer 2 technology are hard-pressed to find room for the BayStack 450s.

Community First Bancshares in Fargo, N.D., finds switched 10M bit/sec at the desktop with 100M bit/sec uplinks to Bay's Accelar switches in the network core sufficient for its needs.

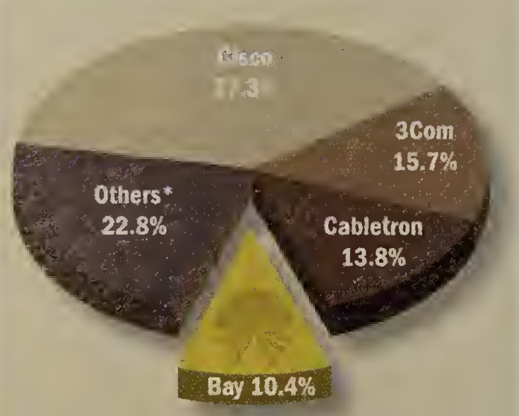
"We're thin-client computing using Citrix Winframe and Microsoft Terminal Server; in most cases the only thing we're moving to the desktop is the bitmap display," said Randy James, vice president of development at Community First Bancshares. "Doing 100M bit/ sec isn't going to buy us anything. Ten meg switched is probably pretty much overkill."

The 12-port BayStack 450 costs $199 per port, while the 24-port version costs $149 per port. The switches are available now.

✆ Bay: (408) 988-2400

Switched Ethernet market share

Total 1997 revenue: $4.7 billion



*Includes: Xylan, FORE, Madge, HP, Intel and others

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BAYSTACK 450 SPECIFICS

- Features 12- and 24-port 10/100M bit/sec switch models
- Can be stacked eight units high
- Includes expansion slots for 2-port 100Base-FX, 4-port 10/100 or single-port Gigabit Ethernet links
- Features separate cascade module
- Available now for $149 to $199 per port

Feds want a digital certificate in every pot

By Ellen Messmer
Washington, D.C.

The federal government is starting to get downright geeky. While many technically savvy organizations are only toying with the idea of digital certificates, the feds seem ready to jump in whole hog.

In fact, the government may be offering a digital certificate to everyone in the country in the not too distant future, according to Marty Wagner, associate administrator for government IT and electronic commerce policy at the General Services Administration (GSA).

"We need a security infrastructure that protects the citizens and corporations," Wagner said in his keynote presentation at last week's E-Gov conference, which highlighted government efforts to make online purchases from suppliers and to make government services available to the public via the Internet.

X.509 digital certificates let Internet users identity themselves to each other remotely, and the government is considering offering a certificate to anyone in the country who wants one, Wagner said. "We're thinking about having multiple contracts to the companies that provide digital certificates, and these companies would give out the certificates for free."

The federal agencies would reimburse the companies for the certificates when they are used in agency applications.

The feds may have a special interest in the widespread use of certificates. For instance, the Social Security Administration (SSA) earlier this year faced criticism from the press for allegedly not having sufficient authentication security on its Web site.

The SSA Web site was allowing Web visitors to see personal financial information via passwords; using certificate-based authentication would be far more secure. However, this practice could become expensive because under some scenarios the government would end up paying a vendor $1 for each time a certificate is validated online, Wagner acknowledged.

Ready, SET

To kick off the E-Gov conference with some fanfare, Congressman Michael Castle (R-Del.) stepped onto the show floor to buy dollar-bill souvenirs from the Web site store of the U.S. Bureau of Engraving. But instead of plunking down cash, Castle used a credit card protected by Secure Electronic Transaction (SET) technology.

Castle's souvenir purchase from the electronic storefront was hailed as the first transaction ever to use SET with elliptic-curve encryption technology, which is believed to be a faster approach to encryption than RSA Data Security, Inc.'s widely used public key technology.

The SET credit card demonstration was done with help from Certicom Corp. and about a dozen partners, including MasterCard International, Inc., Mellon Bank, Zions Bank and Schlumberger Corp., which provided the smart cards. GTE Internetworking, Inc. and Digital Signature Trust Co. were the two digital certificate providers in the electronic commerce pilot.

SET digital certificates let the consumer, merchant and bank identity one another online using the SET protocol. Elliptic-curve encryption technology is not actually part of the current SET 1.0 standard, which has had some trouble getting adopted. Rather, RSA's encryption technology is the foundation for the SET standard, which was created by MasterCard and Visa International, Inc. with help from IBM, Microsoft Corp., Netscape Communications Corp. and others.

However, RSA's encryption technology has faced criticism from some in the banking industry. Critics claim it is too slow to handle the multiple Internet-based processes among the consumer's electronic wallet, the merchant SET server and the bank SET gateway that are called for by the SET standard. Certicom's elliptic-curve encryption may be somewhat faster than RSA public-key, so there is a lot of discussion in the SET community about expanding SET 2.0 to use multiple algorithms. ■

Get more online:

- ○ The GSA's security requests for proposal
- ○ Visa's SET page
- ○ A SET white paper from IBM

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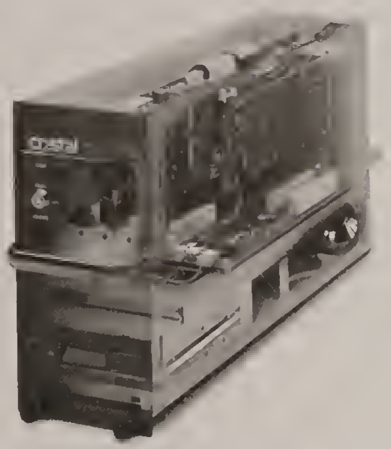

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Lucent takes LANNET off Madge's hands

By David Rohde

Murray Hill, N.J.

Lucent Technologies, Inc. last week took LAN switch vendor LANNET, Ltd. off the hands of its patently unhappy owner, Madge Networks N.V., for $117 million in cash.

LANNET becomes the fifth major acquisition for Lucent in the past year and moves the telecom equipment vendor's burgeoning data division further downstream toward the desktop. LANNET provides stackable, intelligent Ethernet switches for workgroups, as well as multiprotocol, multilayer campus switches and an ATM LAN backbone product.

MAKE THAT FIVE

Lucent has made five significant acquisitions since being spun off from AT&T:

Octel Communications
July 1997
Voice and unified messaging

Livingston Enterprises
October 1997
Remote access for enterprises and carriers

Prominet
December 1997
Gigabit Ethernet switching

Yurie Systems
April 1998
ATM wide-area switching

LANNET
July 1998
Ethernet switches and an ATM LAN backbone product

Lucent's data strategy has been to avoid low-end hub and router acquisitions while attacking emerging markets with high-growth prospects, such as Gigabit Ethernet and IP switching (see graphic).

Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C. consulting firm, noted that the LANNET acquisition broke the mold a bit by thrusting Lucent into the low-end workgroup switches market.

"That's one of the biggest commodities in the communications business," Dzubeck said. "We may see prices next year at $50 per port, and that's on a switch basis, not a hub basis."

Bill O'Shea, president of Lucent's Data Networking Systems unit, said he agreed with Dzubeck's assessment, but added: "This is as low as we intend to go in that space."

Madge in April announced that it wanted to spin off LANNET. At that time the plan was to create a separate, publicly traded company by the end of this quarter, but Madge apparently leapt at the chance for the cash deal. Still, LANNET's failure to deeply penetrate the domestic market cost Madge, which paid $300 million in stock for the company in 1995.

Ironically, LANNET's technology has been key in a partnership between Madge and one of Lucent's PBX rivals, Canadian-based Mitel Corp. Joint development efforts between Mitel and Madge in 1995 and 1996 resulted in a Mitel offering called Networked Voice and Data, or NeVaDa, in which an ATM module within an Ethernet switch cuts a separate voice path out of a private Synchronous Optical Network (SONET) ring, eliminating carrier tolls.

Senior Editor Robin Schreier Hohman contributed to this story.

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Circle Reader Service #20

GTE slaps T-1s together

By Denise Pappalardo
Cambridge, Mass.

When users run out of steam with their T-1 lines, they often start to price T-3s. Now GTE Internetworking has another option — add more T-1s as part of a bundle. The service, GTE's Multi-TI, is a fully managed offering that lets users bundle from two to six dedicated 1.544M bit/sec T-1 Internet access connections.

BUNDLING T-1 INTERNET ACCESS

GTE Internetworking is rolling out its Multi-T1 Internet access service that lets users bundle up to six T-1, 1.544M bit/sec dedicated lines for more bandwidth and cost savings over a T-3 link.

Service	Bandwidth	Fully managed	Monthly price	Includes hardware
Gold Multi-T1	3M bit/sec	Yes	$6,200	Yes
Silver Multi-T1	3M bit/sec	Yes	$5,500	No
Bronze Multi-T1	3M bit/sec	No	$5,500	No
Gold Multi-T1	9M bit/sec	Yes	$12,200	Yes
Standard fractional T-3	6M bit/sec	Yes	$13,500	Yes

Often, when business users already have two T-1s that are reaching full capacity, they start looking into purchasing a T-3 45M bit/sec Internet access pipe from their ISPs.

But for many users, a T-3 pipe is too expensive. For instance, GTE charges $13,500 per month for a fully managed 6M bit/sec fractional T-3 connection, which includes customer premises equipment (CPE). However, Multi-T1 is priced at $12,200 per month for a fully managed 9M bit/sec package (six bundled T-1 lines), which also includes the CPE as part of its service.

While dedicated T-3 Internet access connections can be pricey, some users would rather fork over the extra cash.

"If you can afford three T-1s and need that much bandwidth, it's probably worth it from a management standpoint to get a fractional T-3," said Dwight Gibbs, chief technical fool at The Motley Fool, Inc., an Alexandria, Va.-based financial advisory company on the World Wide Web.

Even though Multi-T1 is positioned as a fully managed service, Gibbs is skeptical that the ISP can handle the balancing of traffic and upkeep of multiple connections that are designed to look like one.

Plus, there is the safety factor. If you need three T-1s, why would you want three from a single ISP? Gibbs asked. "Redundancy is important when your business is dependent on the Internet," he said.

Users can save money by going with a bundled service if they need to jump from one T-I to two or three T-1s. But once you need more than three T-1s, it may be easier to get a fractional T-3, said Dan Taylor, managing director of telecommunications at Aberdeen Group, Inc., a Boston-based consulting firm.

The Multi-T1 service is supported by Express Forwarding, Cisco Systems, Inc.'s Cisco IOS load balancing software. To get the load balancing, customers are required to use a Cisco 4700 series router equipped with four serial ports. Multi-T1 users can buy a Cisco 4700 router themselves or lease the device from GTE.

GTE Internetworking is not the first ISP to roll out a bundled T-1 service. TCG CerfNet earlier this year announced a similar service with comparable prices. TCG CerfNet's service has been available since March.

Multi-T1 is not available nationwide. It is offered in these metropolitan areas: Atlanta, Baltimore, Boston, Chicago, Cleveland, Dallas, Denver, Houston, Los Angeles, Minneapolis, New York, Palo Alto, Calif., Philadelphia, Richmond, Va., San Diego and San Jose.

© GTE Internetworking: (800) 472-4565

Tivoli chief moves on

By Robin Schreier Hohman
Austin, Texas

Frank Moss, the man who seven years ago brought Tivoli Systems, Inc. from start-up to one of the top systems management companies, retired last week — sort of.

Tivoli's *former CEO Frank Moss*

Moss ceded his post as chairman of the board at the IBM subsidiary to Jan Lindelow, who took over as CEO and president for Moss last November.

But don't expect the 49-year-old Moss to retire to Florida and take up fishing.

Instead, Moss will be at the helm of yet another start-up, this time a software venture capital firm that plans on seeding software companies.

Moss has moved from Austin to Boston to head the newly created Strategic Software Ventures LLC, which will fund software start-ups in the Boston, Austin and Portsmouth, N.H., areas. Moss, who spent most of his adult life in Boston after attending graduate school there, said he wanted to move back to be closer to his family and to help increase the technology industries in New England.

"To me, the fun is in the creation," Moss said. "It's almost the fear that comes from trying to put yourself out somewhere new. That gets my heart beating and keeps me young."

But why fund software start-ups in Portsmouth?

"Portsmouth is at the beginning of a growth spurt and is attracting excellent engineers," he said. "It appeals to people who don't like a lot of bureaucracy and taxes and the hustle and bustle of the Boston area."

New Hampshire, whose license plates boast the motto, "Live Free or Die," imposes no state income tax.

New Tivoli Chief Lindelow was CEO and president of Symbol Technologies before moving to Tivoli in June 1997.

Before that he worked at Asea Brown Boveri AG, an international engineering firm. In the mid-1980s, he was president of worldwide sales and services for Sperry Corp., and continued in that position when Sperry was renamed Unisys Corp.

Analysts said they don't expect Moss' departure to significantly affect Tivoli's charter. "Jan has been in charge for the last year and a half," said Judith Hurwitz, president of Hurwitz Group, Inc. in Framingham, Mass.

She said Lindelow has a "more subdued management style" than Moss, and said it's probably time for a change.

"He stayed as long as he needed to bring Tivoli to the point that he has, and I think it was sort of time for a different management style that was more in keeping with IBM's strategy," she said. ■

THE MOSS CHRONICLES

Frank Moss, 49, former Tivoli CEO, president and chairman of the board, and vice president and general manager of IBM's worldwide systems-management business, joined Tivoli from Lotus Development Corp.

Under Moss' watch:

Tivoli went public in 1995.

IBM paid $743 million to purchase Tivoli in 1996.

Tivoli grew from annual sales of $50 million in 1996 to a company record of $1 billion in 1997.

The company grew to more than 2,000 employees worldwide.

On the side:

Tivoli invested heavily in the Thrust SSC supersonic jet car that set the world land speed record at Black Rock Desert in Nevada in 1997.

Moss is a member of the Acuity Corp. (formerly ichat) board of directors. Acuity develops Internet chat and interactive applications.

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*Circle Reader Service #***7**

Directory specification hits minor speed bump

Gaining customer advisor board consensus delays Directory Enabled Networks initiative.

By John Cox

A move to create a standard way of representing network information in enterprise directories is taking a bit longer than expected. But vendors and users should have a workable model of the Directory Enabled Networks (DEN) initiative before year-end, according to some participants in the effort.

A group of customers, called the Customer Advisory Board, is wrapping up a final review of the DEN proposal, originally crafted by Cisco Systems, Inc. and Microsoft Corp., and is now incorporating suggestions from nearly 70 other network vendors. DEN, when it is actually built into hardware and software, will let users store information about the devices and applications in Microsoft's upcoming Active Directory. Then network managers will be able to set up rules, called policies, and apply changes across all DEN-compliant elements.

Signoff coming

For example, a human resources application stores information about a new hire. Based on this event, the directory information can be used by other applications to automatically configure the user's application access rights and adjust the network to give appropriate priority to the new user's traffic.

The Customer Advisory Board is expected to sign off on the proposal at any moment, but the board will invite one last round of comments before handing the proposal and the comments to the Desktop Management Task Force (DMTF).

That handoff is expected in the next three to seven weeks, said Winston Bumpus, a Novell, Inc. executive who is also the president of the DMTF. Bumpus said he expects the DMTF's review to be speedy, and he anticipates that the proposal will be incorporated and issued later this year as part of the Common Information Model (CIM).

CIM is the overarching information model and standard for representing all the managed parts in a distributed network, such as users, applications and hardware, as well as the relationships between these parts.

Two delays

Some members of an informal organization called the DEN Ad Hoc Working Group had hoped to have their proposal to the DMTF earlier, but two developments have lengthened the process somewhat, according to Ray Bell, director of engineering for Cisco's network service and management group.

One development was the creation earlier this year of the Customer Advisory Board, which was intended to facilitate consensus on DEN's features. The second was a new release of the CIM document, with about 100 changes. The DEN partners reviewed and changed DEN as needed to ensure compliance. ■

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For entry details, go to www.nwfusion.com/media lounge.

The entry deadline is Sept. 1, 1998.

Good luck.

In-Site

US WEST unit gives push to network management

By Tim Greene
Denver

For customers who just can't wait for the latest information on how their networks are running, US WEST, Inc.'s !nterprise business unit is now pushing updates to them over the Internet at regular intervals.

The new service, dubbed Pushcaster, is available to customers of !nterprise Managed Data Services, a network management outsourcing offering.

Pushcaster uses proprietary US WEST software that sorts through multiple databases filled with information on US WEST and !nterprise network facilities as well as network gear at customer sites (see graphic). The software sifts through this information, generates reports and sends them to appropriate customer Internet firewalls.

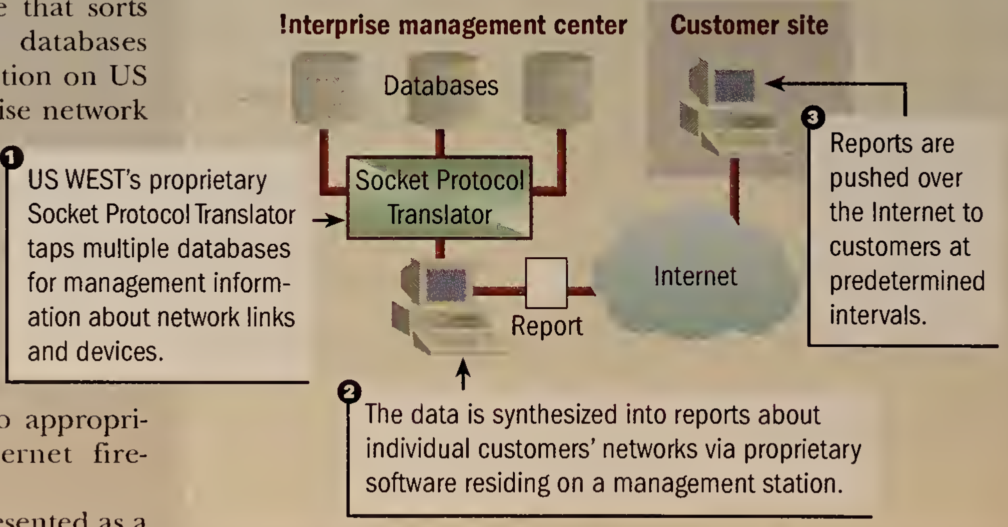
Pushcaster is presented as a screen on a customer's browser-equipped desktop machine. The customer clicks on report options to view particular information, including overall network performance, data on specific links and the performance of individual network devices.

The new service has proven to be more than just a convenience for Modus Media International, Inc. of Norwood, Mass.

The company already had !nterprise managing its 22-site international frame relay network when the US WEST unit asked Modus to beta-test Pushcaster.

IP VOICE POSSIBILITIES

A new service pushes network management data to US WEST'S !nterprise managed data services customers.



① US WEST's proprietary Socket Protocol Translator taps multiple databases for management information about network links and devices.

② The data is synthesized into reports about individual customers' networks via proprietary software residing on a management station.

③ Reports are pushed over the Internet to customers at predetermined intervals.

The service lets Modus keep a sharp eye on key segments of its network where trouble might arise or where traffic is known to have increased, said Wayne McMahon, Modus' director of worldwide networking and messaging systems.

McMahon said he can design custom reports using Pushcaster software and specify how often he wants reports sent to him. This way he can receive updates on critical elements of his network, such as the peak traffic on a particular link that is running a new application or the performance of a router that may need a memory upgrade.

McMahon's team uses the Pushcaster reports to plan upgrades, a function that Modus did not outsource to !nterprise.

Even before Modus started using Pushcaster, the company had access to network performance reports from !nterprise. However, Modus had to fetch those reports by logging on to a secure !nterprise Web site. With Pushcaster, McMahon and his crew don't have to hit the site to pull the reports down.

To manage the Modus network, including routers and switches, !nterprise has a 56K bit/sec link directly into its customer's main site.

McMahon said outsourcing network management saves Modus 80% of what the company would have paid to achieve the same level of management in-house.

In addition, the firm has !nterprise riding herd on a group of international frame relay providers that link Modus sites on three continents.

"I find it extremely desirable for a telco to manage a telco. When there are frame relay performance problems, US WEST is able to get directly on top of an issue and get it corrected quickly," McMahon said.

With the help of !nterprise, McMahon runs Modus' network with six full-time employees, including himself, and one part-timer. Running the network would have required nine to 11 people if Modus handled management and monitoring itself. "I've been able to run a global network with a fairly lean team," McMahon said. ■

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Circle Reader Service #1

WorldCom/MCI: Light at the end of the tunnel

Final regulatory approval for the huge telecom merger may be around the corner, but at what cost?

By Denise Pappalardo

MCI Communications Corp. and WorldCom, Inc. may actually meet their self-imposed merger schedule and officially join forces by mid-summer — but the deal may not be everything the companies had hoped for.

According to sources, the Department of Justice is expected to wave its mighty wand of approval over the $37 billion WorldCom/MCI merger as early as this week. The Justice Department move comes on the heals of the European Commission's (EC) approval of the deal last week.

All or nothing sale?

But here's the rub: like the EC, the Justice Department is expected to approve the WorldCom/MCI merger only if MCI sells off its entire Internet business to remove any overlapping business operations between the two telecommunications companies.

MCI's preemptive strike at the end of May to sell off part of its Internet business to Cable and Wireless plc for $625 million clearly did not quell regulatory concerns.

Instead, all of MCI's Internet business operations, including residential, business and ISP wholesale customers, are on the auction block for a cool $1 to $1.5 billion, according to one source. Analysts believe that MCI's Internet business is worth over a billion dollars, but most would be surprised if the company got more than $1.5 billion for it.

FOR SALE BY OWNER

The European Commission last week said WorldCom and MCI would be allowed to merge if MCI divested its entire Internet business, which includes:

- 1,300 wholesale ISP customers
- Over 250,000 residential dial-up Internet access customers
- Over 2,000 business Internet access customers
- A nationwide OC-12 (622M bit/sec) Internet backbone network
- All of its Cisco Systems 7500 routers and FORE Systems ASX ATM switches that support its network
- Over 300 point-of-presence sites

While numerous companies are said to be bidding on MCI's Internet business, Cable and Wireless is the likely front runner.

Still in talks

Cable and Wireless would not comment on whether the company may be buying MCI's entire Internet business, but a spokeswoman did say the company was still in negotiations with MCI.

The sale of MCI's Internet business would not leave WorldCom MCI in the lurch. WorldCom's Internet assets include UUNET Technologies, Inc., CompuServe Network Services, ANS Communications, Inc. and GridNet International.

While MCI would not comment on the details of its Internet business divestiture, the company did say in a prepared statement that it welcomed the EC's decision to approve the merger, with the condition that MCI sell its Internet business.

The final merger decision from the Justice Department and the Federal Communications Commission should come by early August at the latest.

Pressure on U.S. agencies

"You can bet the full-court press [from MCI and WorldCom] will be on the DoJ and FCC now that the EC has made its decision," said Alan Pearce, president of Washington, D.C.-based Information Age Economics, Inc. and former chief economist at the FCC and for the House telecom subcommittee. ■

End spam

Continued from page 1

START-UP SPOTLIGHT

offering will:

- Employ sophisticated server-based rules that recognize spam and restrict the ability of spammers to relay mail through other people's servers.
- "Treat spam like viruses" by providing as-needed filter updates written by Bright Light developers in response to the specific spam attacks that customers encounter.
- Feature a constant Bright Light monitoring presence on customer e-mail networks to give the company's spam fighters immediate access to new spam outbreaks.
- Ensure that ISP subscribers and corporate end users are granted granular control over which e-mail messages do and do not get blocked. "That's critical because one person's spam is another person's direct-mail piece," said one source.

Bright Light last week declined to discuss its strategy, partners or customers, except to paint the participants as "brand names."

According to sources, AT&T is on board, along with two of the most prominent suppliers of ISP e-mail technology: the recently commercialized Sendmail, Inc. of Emeryville, Calif., and Software.com, Inc. of Lexington, Mass. Those companies also declined comment.

Bright Light has received $5.5 million in start-up financing from a leading venture capital firm, Accel Partners of Palo Alto, Calif. Private investors include Esther Dyson, a longtime industry figure best known for her "Release 1.0" newsletter.

"They have a great handle on what needs to be done [to fight junk e-mail]," said one source familiar with Bright Light's plan. "They could be one of the significant factors in minimizing spam."

Bright Light, FreeLoader

Bright Light's founder and CEO is Sunil Paul, a former Internet product manager at AOL whose previous start-up, a Web-based push service called FreeLoader, was sold in 1996 to Individual, Inc. for $38 million.

Bright Light is likely to encounter competition not only from e-mail and firewall vendors that have been scrambling to add spam controls to their software, but also from spam-specific products and services such as MailFilter from Berkeley Software Design, Inc. and an e-mail outsourcing service from Critical Path.

The outline of Bright Light's plan drew mixed reviews from those who have long fought spam.

"I think that, in general, the idea is sound and should work, but I don't see these services coming cheap," said Alan Krueger, a software engineer and antispam activist. "Still, for many companies and ISPs, the costs of trying to do it yourself could be more, especially if it isn't done right."

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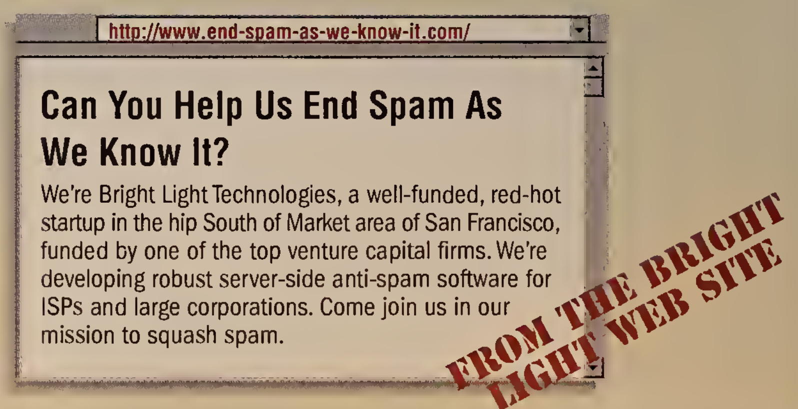

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FROM THE BRIGHT LIGHT WEB SITE

Chris Lewis, a computer security consultant who helped organize a recent boycott by antispam volunteers, said he is skeptical about the long-term potential for this type of filtering scheme.

"Given what I know of spam, [filtering won't] be very effective in reliably differentiating types of spam, without requiring large amounts of manual intervention," Lewis said. While Bright Light may be prepared to throw people at the problem, the approach could prove prohibitively expensive, he added.

Another potential customer said he, too, will need convincing. "Sure, a filter might be great for a while, but eventually [a customer] may lose mailing-list subscriptions, order confirmations and important correspondence," said Ray King, president of Shock Media, a small Toronto-based ISP that was brought to its knees in March by a relay-spam attack. "If someone is viewing my mail based on the fact it may be considered spam, this is also a problem."

Calling all zealots

Based on the tenor of Bright Light's pitch to prospective employees, it's clear the start-up is looking for antispam zealotry along with technical expertise.

"We want people who want to help end spam," reads one of its help wanted ads. "If you think 'people should just hit delete,' you're not for us."

While cognizant of any start-up's need to grab public attention, experts suggested Bright Light may be setting customer expectations too high by boasting of its designs to "end spam as we know it."

"That's like saying you can cure the common cold," one source said. ■

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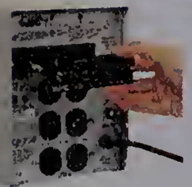

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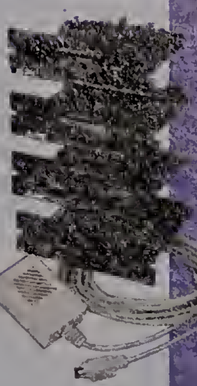

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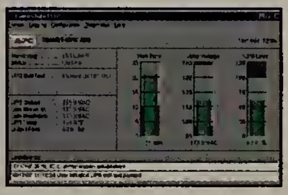

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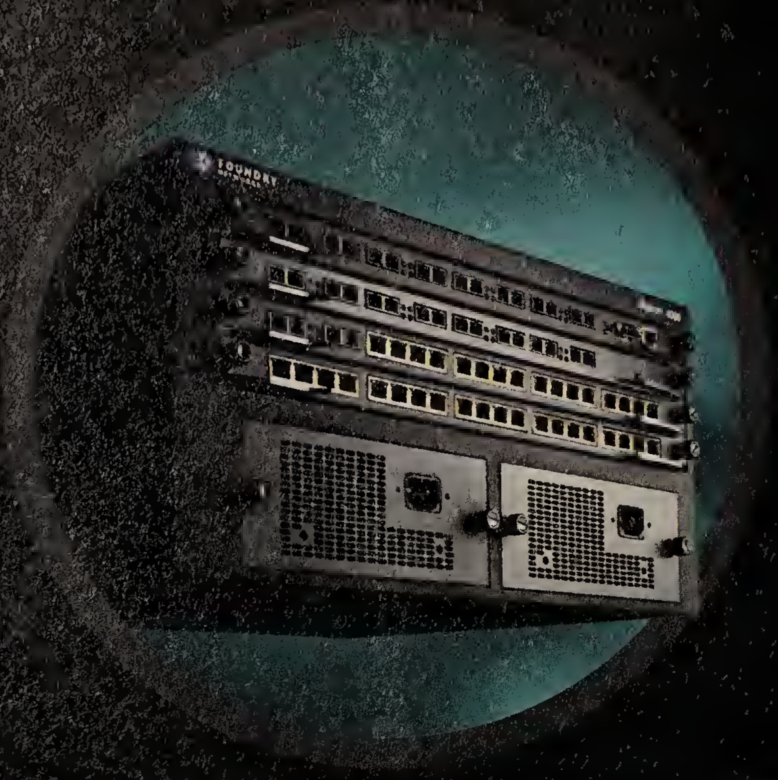

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Briefs

■ **IBM** *has announced a* **Layer 3 Token Ring switch** *for wiring closets that the company claimed is priced similarly to Layer 2 devices.*

The 8270 Nways Token Ring LAN Switch Model 600 is a six-slot switch priced at $475 per port.

IBM's *8270 Nways Token Ring LAN Switch Model 600*

Each slot can accommodate a four-port copper or two-port fiber Token Ring module.

The switch includes IBM's Multiprotocol Switched Services software, which provides Layer 3 switching capabilities such as zero-hop routing for increased performance. The switch will ship later this month.

✆ IBM: (800) 426-3333

■ **Compaq Computer Corp.** *last week announced improvements to several of its* **Pentium II workgroup servers.**

The company's ProLiant 1600 will now boast 1G byte of memory, double what the system previously had, while Compaq's ProLiant 800 will now have 512K bytes of memory.

Both servers will feature upgraded system buses that run at 100 MHz rather than 66 MHz, providing the machines with faster I/O processing.

The new ProLiant 1600, with a 350- or 400-MHz Deschutes Pentium II processor, will cost about $5,700.

The ProLiant 800, which has a 350-MHz chip, costs roughly $3,400.

In addition, Compaq is offering a Pentium II upgrade kit for the ProLiant 2500 server, which currently is powered by Pentium Pro chips. The kit costs $2,159.

✆ Compaq: (800) 345-1518

Users praise Novell's NDS for NT

By Paul McNamara

Novell's fledgling attempt to bridge the NetWare and Windows NT worlds with a common directory has met with uncommon praise from early adopters.

Novell Directory Services (NDS) for NT has effectively reduced administration workloads and costs in mixed NetWare/NT environments since shipping in December, according to early users. Moreover, with Microsoft Corp.'s upgraded NT 5.0 and Active Directory being delayed, users and industry analysts said NDS for NT gives Novell a prime opportunity to staunch the bleeding from its NetWare installed base.

NDS for NT "has been surprisingly clean and very efficient," said Phil Easter, technology strategist for Greyhound Lines, Inc. in Dallas. Predominantly a NetWare shop, Greyhound uses NDS for NT to manage 10 NT servers. This allows the company to take advantage of existing NDS talent already on staff, Easter said.

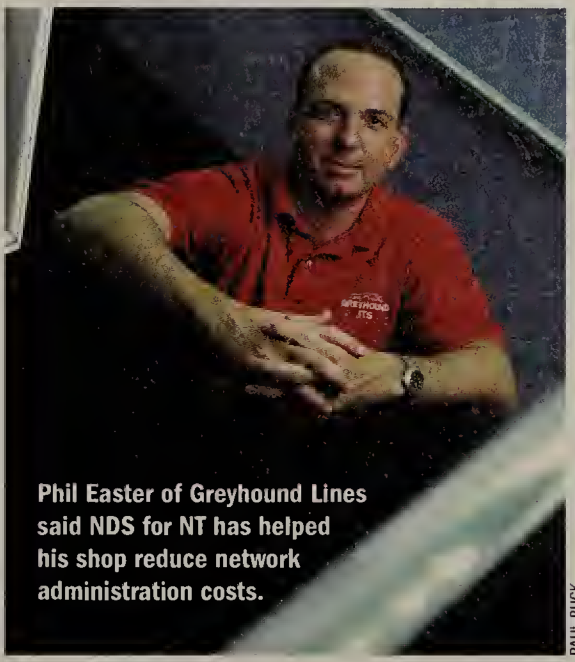
NDS for NT lets customers coordinate the administration and security of stand-alone or networked NT servers by moving NT user information into an NDS database. The software consists of a single enhanced Dynamic Link Library placed on each NT Server that acts as a Primary or Backup Domain Controller. The product includes extensions for NWAdmin, Novell's administrative interface, which gives NDS users control over the NT information.

The tool is particularly useful for companies whose corporate makeup is in flux, according to one customer.

"We're in merger mode, and we do a lot of business with outside entities," many of whom use NT, said Don Clark, manager of client/server networking at Foundation Health Systems, Inc. in Rancho Cordova, Calif.

"There is a lot of cross-domain and trusted domain work," he added. "Setting up all those trusts is so much easier when you have one single point where all of our people can do their jobs."

Clark estimated that NDS for NT is saving Foundation Health $150,000 annually in personnel costs, and he expects that figure to rise to $500,000 once 6,000 more NT users are brought into the system.



Phil Easter of Greyhound Lines said NDS for NT has helped his shop reduce network administration costs.

PAUL BUCK

Consolidation of account management is a key NDS for NT benefit, according to Peter Cruikshank, a systems engineer at the U.S. Navy's Spawar Corporate Information Systems Office in San Diego.

"Right now, we have NDS accounts, NT accounts, [Microsoft] Exchange accounts, Unix accounts and [Lotus] Notes accounts," Cruikshank said. "When a user leaves, it could take four or five administrators to make sure we actually wipe that user out. If I can do my directory synchronization through one product, that should cut down on bandwidth [consumption], replication errors — those types of issues," he said.

Although the first release of NDS for NT must run on a NetWare server, Novell intends to ship a native NT version later this year. Spawar has conducted successful tests of the current NDS for NT and plans a production deployment once the native NT version is available, Cruikshank said.

Greyhound's Easter said he believes the pure-NT edition will open doors into all-NT shops for Novell.

"They probably won't say it publicly, but behind closed doors I am sure a lot of these [NT administrators] are excited about [NDS for NT's possibilities]," Easter said. ■

Start-up tailors servers to support thin clients

Netier servers designed to run multiuser Windows NT applications.

By John Cox

Carrollton, Texas

A Texas start-up is offering customers a thin-client package deal — desktop devices as well as servers that have been tailored to host multiuser Windows NT applications.

Netier Technologies, Inc.'s Atlas II servers shift I/O processing from the main Pentium II processors to one or more Intel Corp. RISC processors running on separate cards. This enables the servers to handle more users than conventional servers, according to Netier President Jim Crocco.

Netier's servers provide a second big performance boost by their ability to cache up to 1G byte of data in system memory, instead of on storage disks.

The servers feature a 10/100M bit/sec adapter card, which also carries the Intel i960 RISC chip to process I/O requests. Netier's servers cost from about $5,000 to $25,000, and come loaded with Microsoft Corp.'s Windows NT Server 4.0 Terminal Server Edition (TSE) or Citrix Systems, Inc.'s WinFrame 1.7, which is based on NT 3.51 and is the forerunner of TSE.

Netier also offers the NetXpress SL 1000 and SL 2000 thin clients, which are small and slender upright boxes designed to be outfitted with a keyboard, mouse and monitor. The NetXpress terminals can run Windows CE or a stripped-down version of Windows NT. The boxes vary slightly in size to support different Pentium-class CPUs, various amounts of RAM and optional floppy or hard disks, if desired. Prices range from $399 to $799, depending on the options chosen.

Netier was incorporated Feb. 1 and is largely funded by CEO Don Daseke, an 11-year IBM veteran. Engineering work for the Atlas servers and NetXpress terminals, which are the company's first products, began about 18 months ago.

New from Esprit

Separately, Esprit Systems Inc. in San Jose, Calif., has announced the PC-TC, a card that plugs into any 16-bit ISA slot found on older PCs. The card and its attendant software let these PCs work with Citrix's WinFrame multiuser NT server or its MetaFrame software, which runs atop Microsoft's Windows NT Server 4.0 TSE. The clients use the Citrix ICA protocol to connect to the server.

PC-TC is available now and costs $249.

✆ Netier: (972) 241-1763; Esprit: (408) 954-9900

Get more online:

- An overview of NetXpress
- Details about Atlas servers
- An article on the realities of network computing

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WIRED WINDOWS

Contradicting Mark Gibbs

Here I was, all ready to write about a new product Novell is shipping this week that should make your job easier, when I opened *Network World* and read Mark Gibbs' "Backspin" column (June 29, page 92). It seems both Mark and I had columns inspired by Eric Schmidt's PC Expo keynote. However, Mark and I interpreted Schmidt's remarks a bit differently.

Specifically, we disagreed on the line "the directory is the computer," which Schmidt used to emphasized the growing importance of directory services in an increasingly networked world. Mark thought this ". . . an interesting idea: Tie users to directory services rather than physical machines." He thought it might be "cool," but noted that because "there's no product to show yet, it is hard to say what this will mean in practice."

Meanwhile, I mentioned Novell Directory Services (NDS), Microsoft's Active Directory, Lightweight Directory Access Protocol and Directory Enabled Networks. You want directory-enabled products? Start with GroupWise, Exchange and Notes. Look at Novell's ZENworks and Microsoft's Zero Administration Windows.

Then there's Novell's BorderManager, which is what I really want to talk about. Hard on the heels of the success of BorderManager FastCache, Novell this week is releasing BorderManager Authentication Service (BMAS). This is a follow-up to the previously released Radius Service for NDS, which will now be dropped from the product line. BMAS adds a number of usability features, including accounting support, audit logging and better performance. BMAS is an excellent candidate to sit on your remote access server (RAS). While it doesn't have to reside on the same hardware as your RAS, doing so improves the performance.

Dave Kearns

And RAS doesn't need to be a NetWare server. It can also be an NT 4 server. Novell is releasing an application that can run on either a NetWare or a Windows NT network operating system — a first as far as I know. Later this year, when Novell releases NDS on NT, you'll be able to run BMAS and NDS on your NT network without having a NetWare server. That's a bold move — but one I think will pay off. It points out Schmidt's stated objective of making the directory the heart and soul of the network.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

Tip of the week

Microsoft has a new, free information service for the security-conscious (and who isn't, these days?). It relies on old-style push technology — no channels and no monitoring the Internet. The Microsoft Security Notification Service is a free e-mail notification that talks about the security of Microsoft products. Anyone can subscribe to the service, and you can unsubscribe at any time. Bulletins will contain information on what the security issue is, what products it affects, how to protect yourself, plans to fix the problem and links to other sources of information. Sign up now at www.microsoft.com/security.

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04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment /Recreation
06. ☐ Media/TV/Cable /Radio/Print
07. ☐ Retail/Wholesale Trade/ Business Services
08. ☐ Transportation
09. ☐ Utilities
10. ☐ Education
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12. ☐ Government (Federal/State/Local)
13. ☐ Military
14. ☐ Aerospace
15. ☐ Consulting (Independent)*
16. ☐ Carriers/Interconnects
17. ☐ Internet Service Provider (ISP)
18. ☐ Manufacturing (Computer/ Communications/OEM)
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20. ☐ Systems/Network Integrators*
21. ☐ Distributors (Computer/ Communications)*
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2. What is your job function?
(check ONE only)

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2. ☐ LAN Management
3. ☐ Datacom/Telecom Management
4. ☐ IS/IT/MIS/CIO/Systems Management
5. ☐ Internet/Intranet/Electronic Commerce Mgmt., Webmaster
6. ☐ Engineering Management
7. ☐ Corporate Management (CEO, Pres., VP, Dir., Mgr., Financial Management)
8. ☐ Consultant (Independent)
9. ☐ Other *(please specify)* ____________________

3. What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of?
(Please print the appropriate number code on the line next to each product category. Please complete ALL categories A–N.)

1. $100 Million or more
2. $50 Million to $99.9 Million
3. $25 Million to $49.9 Million
4. $10 to $24.9 Million
5. $1 to $9.9 Million
6. $100,000 to $999,999
7. $50,000 to $99,999
8. Under $50,000
9. None of the above

A _____ Large Systems *(Mainframes/Minis)*
B _____ Desktops *(Micros/Laptops/Workstations)*
C _____ Servers
D _____ LANs
E _____ WAN Equipment
F _____ Carrier Services
G _____ Internetworking
H _____ Internet
I _____ Intranet
J _____ Extranet
K _____ Remote Access
L _____ Peripherals
M _____ Software
N _____ Service/Support

4. What is the total number of sites for which you have purchase influence?
(check ONE only)

1. ☐ 100+ 2. ☐ 50 – 99 3. ☐ 20 – 49 4. ☐ 10 – 19 5. ☐ 2 – 9 6. ☐ 1 7. ☐ None

5. What is the total number of Servers/Clients/LANs installed/planned at your location/ in your entire organization?
(check ONE box in each column)

SERVERS				CLIENTS				LANS			
At Location A			Entire Org. B	At Location C			Entire Org. D	At Location E			Entire Org. F
☐	1.	50,000+	☐	☐	1.	50,000+	☐	☐	1.	50,000+	☐
☐	2.	10,000 to 49,999	☐	☐	2.	10,000 to 49,999	☐	☐	2.	10,000 to 49,999	☐
☐	3.	1,000 to 9,999	☐	☐	3.	1,000 to 9,999	☐	☐	3.	1,000 to 9,999	☐
☐	4.	100 to 999	☐	☐	4.	100 to 999	☐	☐	4.	100 to 999	☐
☐	5.	50 to 99	☐	☐	5.	50 to 99	☐	☐	5.	50 to 99	☐
☐	6.	10 to 49	☐	☐	6.	10 to 49	☐	☐	6.	10 to 49	☐
☐	7.	1 to 9	☐	☐	7.	1 to 9	☐	☐	7.	1 to 9	☐
☐	8.	none	☐	☐	8.	none	☐	☐	8.	none	☐

6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check one only)
1. ☐ Corporate/Enterprise
2. ☐ Department
3. ☐ None

B. Involvement (check ALL that apply)
1. ☐ Create Network Strategy
2. ☐ Recommend/Specify
3. ☐ Approve
4. ☐ Evaluate
5. ☐ Determine the Need
6. ☐ None

7. What is the estimated number of employees at your location/in entire organization?
(check ONE in each section)

A. At your location:
1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 250 – 499
8. ☐ 249 or less

B. Entire organization:
1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 499 or less

8. Please indicate the products/services that you are currently involved in purchasing or plan to purchase:
(check ALL that apply)
A. Currently involved in purchasing B. Plan to purchase

INTERNET/INTRANET
A B
- ☐ 01. ☐ Internet Services/Web Hosting
- ☐ 02. ☐ Firewalls/Security/Encryption
- ☐ 03. ☐ Web Servers/Software
- ☐ 04. ☐ Web Servers/Hardware
- ☐ 05. ☐ TCP/IP Software
- ☐ 06. ☐ Management/Monitoring Software
- ☐ 07. ☐ Voice/Video Over IP
- ☐ 08. ☐ VPN Equipment/Services
- ☐ 09. ☐ Legacy Integration Tools (Web to Host)
- ☐ 10. ☐ Web Development Tools (JAVA, ActiveX, etc.)
- ☐ 11. ☐ Push Technology
- ☐ 12. ☐ Web Browsers
- ☐ 13. ☐ Intranet Applications/Groupware
- ☐ 14. ☐ Search/Retrieval Products (web crawler)
- ☐ 15. ☐ Electronic Commerce Tools
- ☐ 16. ☐ Web Authoring Tools
- ☐ 17. ☐ Other ____________

LOCAL-AREA NETWORKS/INTERNETWORKING
A B
- ☐ 18. ☐ Local-Area Networks
- ☐ 19. ☐ Network Operating System Software
- ☐ 20. ☐ Servers
- ☐ 21. ☐ Print Servers
- ☐ 22. ☐ Routers
- ☐ 23. ☐ ATM Switches
- ☐ 24. ☐ Token-Ring Switches
- ☐ 25. ☐ Ethernet Switches
- ☐ 26. ☐ Fast Ethernet
- ☐ 27. ☐ Gigabit Ethernet
- ☐ 28. ☐ Layer 3 Switches
- ☐ 29. ☐ Network Storage Devices (NASs, SANs)
- ☐ 30. ☐ LAN Storage/Backup
- ☐ 31. ☐ Optical Storage/Backup/ Jukeboxes
- ☐ 32. ☐ Disk Storage/Backup
- ☐ 33. ☐ Tape Storage/Backup
- ☐ 34. ☐ RAID Storage/Backup
- ☐ 35. ☐ Network Test/Diagnostic Tools
- ☐ 36. ☐ Cables, Connectors, Baluns
- ☐ 37. ☐ UPS
- ☐ 38. ☐ Network Interface Cards (NICs)
- ☐ 39. ☐ Hubs
- ☐ 40. ☐ Intelligent Hubs
- ☐ 41. ☐ Stackable Hubs
- ☐ 42. ☐ Bridge/Router
- ☐ 43. ☐ SNMP Network Management
- ☐ 44. ☐ Gateways
- ☐ 45. ☐ Concentrators/Repeaters
- ☐ 46. ☐ Other *(please specify)* ____________

COMPUTERS/PERIPHERALS
A B
- ☐ 47. ☐ Thin Clients/Network Computers (NCs)
- ☐ 48. ☐ Laptops/Notebooks/Sub-Notebooks
- ☐ 49. ☐ Micros/PCs
- ☐ 50. ☐ Minis
- ☐ 51. ☐ Mainframes
- ☐ 52. ☐ Workstations
- ☐ 53. ☐ Printers/Network Printers
- ☐ 54. ☐ CD-ROM/DVD
- ☐ 55. ☐ Fax/Modem Boards
- ☐ 56. ☐ Memory/Chips/Boards/Cards
- ☐ 57. ☐ Other ____________

REMOTE/WIRELESS COMPUTING
A B
- ☐ 58. ☐ Remote Access Products
- ☐ 59. ☐ Remote Access Services
- ☐ 60. ☐ PDAs
- ☐ 61. ☐ PCMCIA Devices
- ☐ 62. ☐ Wireless Data Equipment/Services
- ☐ 63. ☐ Cellular Equipment & Services
- ☐ 64. ☐ Other ____________

SOFTWARE/APPLICATIONS
A B
- ☐ 65. ☐ Network Management
- ☐ 66. ☐ Systems Management
- ☐ 67. ☐ Security
- ☐ 68. ☐ Communications Software
- ☐ 69. ☐ Terminal Emulation
- ☐ 70. ☐ Operating Systems
- ☐ 71. ☐ Applications Development Tools
- ☐ 72. ☐ Database Management/ RDBMS
- ☐ 73. ☐ Groupware
- ☐ 74. ☐ Workflow
- ☐ 75. ☐ EDI
- ☐ 76. ☐ E-mail
- ☐ 77. ☐ Desktop Videoconferencing
- ☐ 78. ☐ Imaging
- ☐ 79. ☐ Suites/Server Suites (Back Office, etc.)
- ☐ 80. ☐ Middleware
- ☐ 81. ☐ Document Management
- ☐ 82. ☐ Site Metering Tools
- ☐ 83. ☐ Computer Telephony Integration (CTI)
- ☐ 84. ☐ Data Warehousing
- ☐ 85. ☐ Anti Virus Software
- ☐ 86. ☐ Multimedia
- ☐ 87. ☐ Yr. 2000 Conversion Software (Y2K)
- ☐ 88. ☐ Helpdesk
- ☐ 89. ☐ Web Based Management Tools
- ☐ 90. ☐ Directory Services
- ☐ 91. ☐ Other ____________

WIDE-AREA NETWORK EQUIPMENT & SERVICES
A B
- ☐ 92. ☐ 56 Kbps Modems
- ☐ 93. ☐ Under 56 Kbps Modems
- ☐ 94. ☐ Cable Modems
- ☐ 95. ☐ Asynchronous Transfer Mode (ATM)
- ☐ 96. ☐ Frame Relay Equipment/Services
- ☐ 97. ☐ ISDN Equipment & Services
- ☐ 98. ☐ FT-1/T-1/T-3 Multiplexers/Services
- ☐ 99. ☐ xDSL Services/Products
- ☐ 100. ☐ Diagnostic/Test Equipment
- ☐ 101. ☐ DSU/CSU
- ☐ 102. ☐ PBXs
- ☐ 103. ☐ Videoconferencing
- ☐ 104. ☐ Leased Lines
- ☐ 105. ☐ Switched Data
- ☐ 106. ☐ Virtual Private Networks (VPN)
- ☐ 107. ☐ FRADs
- ☐ 108. ☐ Managed LAN/Router Services
- ☐ 109. ☐ Other ____________
- ☐ 110. ☐ Outsourcing/Systems Integration Services
- ☐ 111. ☐ Education/Training Services
- ☐ 112. ☐ None of the above (1 – 111)

9. Please indicate the platforms that are currently installed/planned:
(check ALL that apply)
A. Currently installed B. Planned for purchase

NETWORK PROTOCOLS
A B
- ☐ 01. ☐ TCP/IP
- ☐ 02. ☐ IPv6
- ☐ 03. ☐ SNA
- ☐ 04. ☐ Novell IPX/SPX
- ☐ 05. ☐ APPC/APPN/LU 6.2
- ☐ 06. ☐ NETBIOS
- ☐ 07. ☐ NFS
- ☐ 08. ☐ SNMP
- ☐ 09. ☐ Other ____________

LAN ENVIRONMENT
A B
- ☐ 10. ☐ Gigabit Ethernet
- ☐ 11. ☐ Switched Ethernet
- ☐ 12. ☐ Fast Ethernet (100 Megabit Ethernet)
- ☐ 13. ☐ Ethernet
- ☐ 14. ☐ ATM
- ☐ 15. ☐ Token Ring/Token Ring Switching
- ☐ 16. ☐ IP Switching
- ☐ 17. ☐ Layer 3 Switching
- ☐ 18. ☐ FDDI
- ☐ 19. ☐ 100Base-T
- ☐ 20. ☐ 10Base-T
- ☐ 21. ☐ Fibre Channel
- ☐ 22. ☐ Other ____________

NETWORK OPERATING SYSTEM
A B
- ☐ 23. ☐ Windows NT
- ☐ 24. ☐ Windows NT/Advanced Server
- ☐ 25. ☐ Novell IntranetWare
- ☐ 26. ☐ Novell (NetWare 5.X)
- ☐ 27. ☐ Novell (NetWare 4.X)
- ☐ 28. ☐ Novell (NetWare 2.X, 3.X)
- ☐ 29. ☐ Microsoft (LAN Manager)
- ☐ 30. ☐ Banyan (VINES)
- ☐ 31. ☐ IBM (Server)
- ☐ 22. ☐ Other ____________

COMPUTER OPERATING SYSTEM
A B
- ☐ 33. ☐ NT Server
- ☐ 34. ☐ NT Workstation
- ☐ 35. ☐ Unix/Xenix/AIX/SCO
- ☐ 36. ☐ Solaris
- ☐ 37. ☐ Windows
- ☐ 38. ☐ Windows 95
- ☐ 39. ☐ Windows 98, .9x
- ☐ 40. ☐ DOS
- ☐ 41. ☐ OS/2, OS/2 Warp
- ☐ 42. ☐ IBM MVS/VM/VSE
- ☐ 43. ☐ Digital VMS
- ☐ 44. ☐ Macintosh
- ☐ 45. ☐ Other ____________
- ☐ 46. ☐ None of the above (1 – 45)

10. Which of the following Servers/Clients do you have installed/planned at your location?
(check ALL that apply in each column)

	A. Servers		B. Clients		A. Servers		B. Clients
Power PC	☐	01.	☐	486, 386, 286	☐	07.	☐
Power Mac	☐	02.	☐	Sun Sparc	☐	08.	☐
Mac Other	☐	03.	☐	Risc	☐	09.	☐
Multiprocessor Servers	☐	04.	☐	Alpha	☐	10.	☐
Pentium II (PII)	☐	05.	☐	Other	☐	11.	☐
Pentium/Pentium Pro	☐	06.	☐				

11. Which of the following hardware platforms are installed/planned in your company?
(check ALL that apply)

A - Mainframes (Large Scale)
1. ☐ IBM
2. ☐ Amdahl
3. ☐ Cray
4. ☐ Hitachi
5. ☐ Unisys
6. ☐ Other ____________

B - Minis (Midrange)
1. ☐ IBM RS/6000
2. ☐ IBM AS/400
3. ☐ Digital
4. ☐ Tandem
5. ☐ Unisys
6. ☐ AT&T GIS
7. ☐ H-P
8. ☐ Data General
9. ☐ Other ____________

C - Workstations
1. ☐ Sun Microsystems
2. ☐ Silicon Graphics
3. ☐ Digital
4. ☐ H-P
5. ☐ IBM
6. ☐ Other ____________

12. What is the estimated gross revenue of your entire company/institution?
(check ONE only)

01. ☐ $20 billion or more
02. ☐ $10 billion to $19.9 billion
03. ☐ $1 billion to $9.9 billion
04. ☐ $500 million to $999.9 million
05. ☐ $100 million to $499.9 million
06. ☐ $50 million to $99.9 million
07. ☐ $10 million to $49.9 million
08. ☐ $5 million to $9.9 million
09. ☐ $4.9 million or less
10. ☐ None of the above

13. For which areas outside of North America do you have purchase influence?
(check ALL that apply)

1. ☐ Europe 2. ☐ Asia 3. ☐ South America 4. ☐ Australia 5. ☐ Middle East 6. ☐ None

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Briefs

IBM *last week announced* **price increases** *for users looking to upgrade their 3745 Communications Controllers. Some 20 models are included; the percentages of the cost increases varied depending on the models.*

IBM's 3745

For instance, upgrading the 3745 Model 170 to Model 17A will now cost $11,000 from $8,000; going from the 210 to the 21A will now be $15,000, up from $11,000.

© IBM: (800) 436-4968

Network Telesystems, Inc. *has announced shipment of a* **virtual private network server.** *TunnelMaster helps users securely access corporate resources from home or other remote locations over the Internet. It routes IP, IPX and AppleTalk protocols and supports the Point-to-Point Tunneling Protocol and the Layer 2 Tunneling Protocol.*

TunnelMaster costs $10,000 for 250 users and $15,000 for 1,000 users.

© Network Telesystems: (408) 523-8100

SBE, Inc. *last week announced it was rolling out* **WAN adapters** *that support SCO UnixWare 7 and IBM's eNetwork Communications Server running on SCO UnixWare 7. The SBE wanXL adapter cards support X.25 and SNA-based Synchronous Data Link Control protocols. They can be used for the high-speed connection of remote offices over leased lines. SBE claimed the wanXL cards offload connection setup functions from the server, freeing up CPU cycles.*

The cards can handle up to four T-1 connections and are shipping now for prices starting at $649. The X.25 and SDLC drivers are included on the IBM CommServer CD.

© SBE: (925) 355-2000

Ridgeway bets on videoconferencing boom

By Tim Greene
Reading, England

As video over IP becomes more common, users face a problem: How to get old videoconferencing equipment to talk to new IP gear.

Start-up Ridgeway Systems & Software, Ltd. is working on an answer. The company is developing hardware and software to translate between the industry standard that governs ISDN videoconferencing, H.320, and the standard that rules video-over-IP connections, H.323.

Ridgeway's products will let users of ISDN videoconferencing hardware, the most common in use today, hold conferences with LAN-based IP videoconferencing, the wave of the future.

"The amount of money spent on [ISDN] videoconferencing is significant and growing," said Steve Bland, sales and marketing director for Ridgeway. Customers are not likely to throw that gear away to switch to IP, he said.

In addition, regardless of which platform a corporation settles on, the firm is likely to want to set up videoconferences with other corporations, over whose equipment the corporation will have no control, Bland said.

Some regions of the U.S. are not served by ISDN but can be reached via IP networks. Extending interoperable IP videoconferencing to those non-ISDN areas would also require such a gateway.

Other vendors have been working on the same problem. For example, RADVision, Inc. makes a gateway that can handle both forms of videoconferencing. Each OnLAN L2W-323 gateway converts a circuit-switched call to packets for transport across an IP network. When OnLAN was released three years ago, the product was based on proprietary technology. Since then, RADVision has made the package compliant with H.320 and H.323.

But the RADVision box supports only four concurrent video calls. The boxes can be stacked to handle more simultaneous callers, and RADVision regards that capability as an advantage.

Customers can buy into a single gateway for $10,000 and add additional gateways as demand rises, the company said.

Ridgeway plans to offer a gateway box for use in enterprise nets. The company will also build a higher capacity box that can fit in a carrier network, Bland said.

Beyond videoconferencing, the Ridgeway gateway will connect PBXs to IP networks, acting as a gateway to IP voice as well. This feature will allow corporate users to save money on intersite phone calls that can be carried over data networks without the need for more expensive public toll calls or dedicated voice circuits.

Ridgeway will base its gateways on Microsoft Corp.'s Windows NT servers because NT is becoming more common in both enterprise and carrier networks, according to Bland. PictureTel also bases its gateway, LiveGateway, on NT, but one server supports only four calls.

A spokesman said PictureTel had no immediate plans for a larger gateway to handle more sessions.

Ridgeway would not reveal more specifics of its enterprise and carrier product categories. It expects to ship products in about a year.

© Ridgeway: 011 44 (0)7000 323 324

PROFILE: RIDGEWAY SYSTEMS & SOFTWARE, LTD.

Headquarters:	Reading, England
Founded:	July 1997
Products:	Gateway devices linking ISDN and IP videoconferencing systems.
Founders:	Managing partner Graham Seabrook and technical director Steve Davies, both formerly with British Telecom's Martlesham Heath Laboratories.
Funding:	$5 million total from Bessemer Venture Partners and Atlas Venture in March.
Competitors:	PictureTel, RADVision
Employees:	15
Fun fact:	Both founders are environmentalists who are involved in building renovation and restoration.

Get more online:

- Details of Ridgeway's products
- A diagram of a gateway deployment
- A review of videoconferencing tools

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Sync upgrades frame relay mgmt. software

FRAP 3.0 supports small multiservice frames over high-speed links.

By Jim Duffy
Irvine, Calif.

Sync Research, Inc. has unveiled a new version of software for its frame relay access devices that lets users access more detailed management information from integrated voice/data transmissions.

Release 3.0 of Sync's Frame Relay Access Probe (FRAP) software features enhanced packet processing and management prioritization capabilities for a broad range of traffic types, such as voice-over-data applications and other multiservice traffic. The software also includes in-band management extensions for automatically rerouting management data around network failures.

Multiservice applications, such as voice over frame relay and voice over IP, are best served by small, 100-byte frames transmitted at high frequencies to minimize jitter and other low-transmission quality factors, Sync claimed.

But this traffic profile can impact the performance of frame relay access devices, routers, switches, WAN monitoring probes and other devices that are sensitive to frame size, the company said.

The packet queuing and forwarding enhancements in FRAP 3.0 software are optimized for high-speed links — such as T-1 and High Speed Serial Interface lines — carrying small frames.

The software features a customizable prioritization capability for queuing frame relay data and in-band network management traffic.

The software also implements a so-called Inverse Address Resolution Protocol capability that enables the FRAP to automatically reroute management connections across alternate permanent virtual circuits if the primary PVC supporting management data fails.

Sync claims to have installed more than 7,500 FRAPs to date in enterprise and service provider networks.

Customers include First Union National Bank, Wells Fargo Bank and Southern New England Telephone.

FRAP 3.0 will ship this week, Sync said. It is a $400 software upgrade but free to subscribers of Sync's software maintenance service.

© Sync: (714) 588-2070

Compatible offers heavy-duty devices for VPN traffic

By Tim Greene
Boulder, Colo.

Compatible Systems Corp. is betting that you are discovering more and more uses for virtual private networking over the Internet and is responding with higher capacity gear to accommodate the extra traffic load.

The company this week will introduce IntraPort 2, IntraPort 2+ and IntraPort Enterprise, three virtual private network (VPN) devices that establish secure connections across public IP networks, including the Internet. All three boxes can support from eight to 250 times more remote sessions than Compatible's initial offering, IntraPort.

In addition, new software in the boxes enables them to talk to each other, letting users establish LAN-to-LAN links across regional offices.

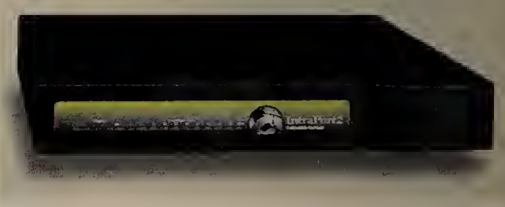
The option sounds appealing, said Mark Schmidt, director of information services at Heritage Broadcasting Group in Cadillac, Mich. Heritage has a second office in Travers City, Mich., and the two are tied together with a dedicated T-1 line that has gone down three times in the past three years. Schmidt said an IntraPort box that can talk to another IntraPort would be an inexpensive way to back up the T-1.

Heritage already uses an IntraPort to connect eight remote offices over the Internet to the Cadillac site to handle e-mail and other data services. Remote users whose PCs are outfitted with IntraPort client software dial a local ISP and establish a secure session with an IntraPort device at the central Cadillac office. The VPN setup replaced more expensive long-distance, direct-dial remote access to a Windows NT remote access server, Schmidt said.

COMPATIBLE ADDS POWER

IntraPort 2 is one of Compatible Systems' three new virtual private network appliances that:

- Establish encrypted sessions over IP networks.
- Support RADIUS and Secure ID security.
- Support Windows 95, 98 and NT, MacOS, and Linux clients.



The IntraPort 2 and IntraPort 2+ are based on the same chassis, with the IntraPort 2+ sporting a dedicated processor to perform Triple DES encryption. IntraPort 2 supports 64 simultaneous remote access sessions and 16 LAN-to-LAN sessions. With the additional processing power, IntraPort 2+ supports 200 client sessions and 32 LAN-to-LAN sessions simultaneously, the company said.

IntraPort Enterprise can handle 2,000 remote clients and 64 LAN-to-LAN sessions. All three boxes sit between a wide-area router and a LAN, connected via two 10/100M bit/sec Ethernet ports.

IntraPort 2 costs $3,995 and IntraPort 2+ costs $9,995. Both are available now. IntraPort Enterprise costs $35,000 and will be available in September. Client software is free with the hardware and supports Windows 95, 98 and NT, MacOS, and Linux operating systems.

✆ Compatible: (800) 356-0283

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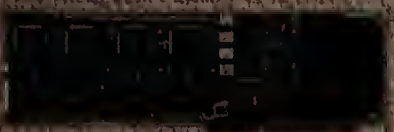
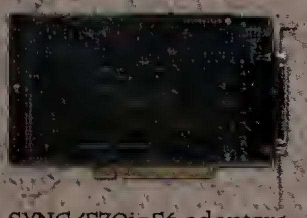
Another reason is scalability. Say you're growing and need to add more connections. With Digi, that's not a problem. Our remote access products provide the connectivity you need, whether it's four, eight, or as many as 224 ports. They're reliable, too, which is exactly why we're the global leader in providing adapter cards for server-based remote access.



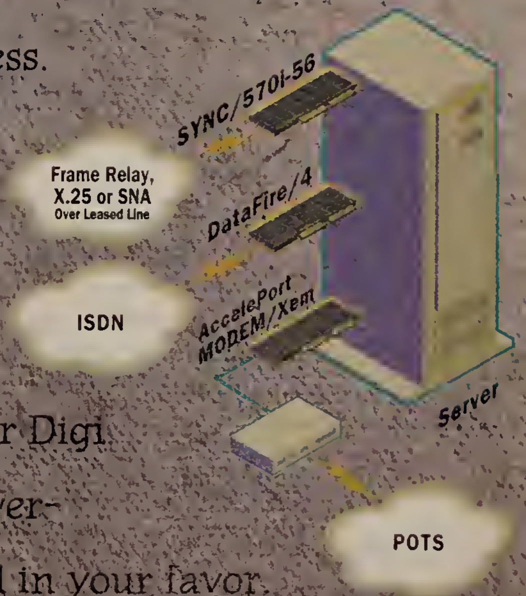
DataFire/4 adapters connect directly to ISDN lines to provide reliable, high-speed access to the Internet.



SYNC/570i-56 adapters are high-speed, economical synchronous solutions for SNA connectivity.

So stick a note to your monitor. Tie a string around your double-clicking mouse finger. When you need remote access, remember Digi. The advantages are overwhelmingly stacked in your favor.

To learn more about Digi products or for a free Digi product planner CD, visit www.dgii.com or call 1-800-255-2983.



Where Remote Access Is A Way Of Life.

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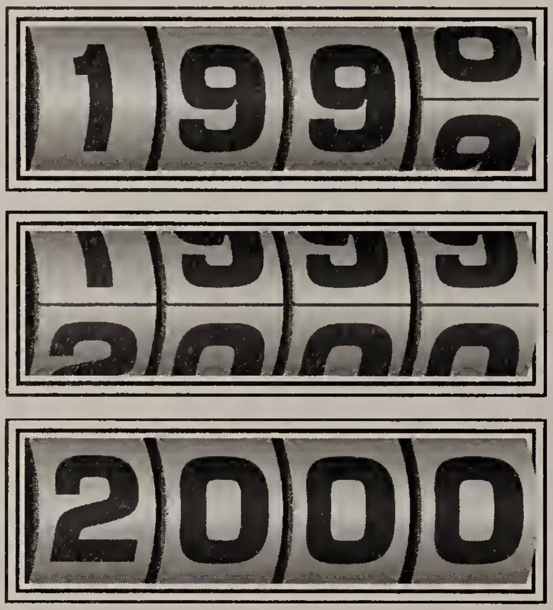
INTERNETWORKING MONITOR

Microsoft in the enterprise: Unsafe at any speed?

Enterprise network managers trying to deploy NT Server and critical subsystems such as Exchange may well feel that their systems, like a 1961 Chevy Corvair in Ralph Nader's classic 1965 book, are "Unsafe at Any Speed." Like the sporty vehicle that would flip over going 35 miles per hour on a dry road, inexplicable crashes seem to be a way of life in NT. But help might be just around the corner.

More than three decades after taking on the auto industry — and prevailing — consumer advocate extraordinaire Nader in the past year has turned his sights on Microsoft.



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Nader and company are concerned with far more than the browser wars that have captured recent headlines. In their view, Microsoft's monopoly in the computer operating system market is nothing but bad news, and they say the U.S. Department of Justice needs to take even more drastic steps to rein in Microsoft.

Enterprise network managers may not realize it, but they need Nader's help. Microsoft's little publicized, but critically important, policies concerning the "openness" of its de facto standard operating system and critical subsystems may make instability a way of life, strangle independent third-party creativity and keep IT managers permanently at their mercy.

Conversely, enterprise stalwart IBM has been open with its mainframe operating systems. Consider the plethora of information IBM shared with any customer that requested it — and ask yourself what Microsoft has done along the same lines.

Kevin Tolly

For starters, IBM published detailed logic manuals that described the low-level behavior of the modules that made up the operating system and critical subsystems, such as the CICS transaction processing system.

These served as valuable educational tools for IT staff and third-party developers alike. They made customers more knowledgeable and thus more self-sufficient, and provided a launching pad for independent software developers wishing to provide features that IBM had neglected to deliver.

IBM published detailed documentation of system control blocks allowing customers to dig through system dumps and identify the cause of a system failure. Those who needed to know more could order the source code on microfiche.

The availability of this information and service/support tools spawned a generation of third-party software development that enhanced IBM's core systems and delivered vast benefits to customers. In fact, companies such as Computer Associates could not have come into existence had IBM's policy been different.

To the best of my knowledge, Microsoft doesn't come close to providing the kind of information that allowed the previous generation of network managers and developers to build and maintain large enterprises. In my view, Microsoft should do so proactively. And if it balks, perhaps Nader's Raiders can help change its mind.

Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at (732) 528-3300, ktolly@tolly.com or www.tolly.com.

Carriers & ISPs

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Briefs

■ **AT&T Wireless Services** *is selling off its Advanced Messaging Division to* **Metrocall, Inc.** *for $205 million.*

The cash and stock deal stipulates that the Alexandria, Va.-based Metrocall will acquire AT&T's 1.2 million wireless paging customers.

In exchange, AT&T for the next five years will exclusively sell Metrocall's wireless paging services in its AT&T Wireless Services retail stores.

■ *A trade group for smaller carriers is protesting one part of a congressional move to put a brake on "slamming" — the practice of switching customers' long-distance carriers without proper authorization.*

The **Telecommunications Resellers Association** *(TRA)* **opposes** *a proposal requiring switchless resellers to post* **surety bond against slamming** *allegations.*

The provision could "adversely affect" 50 to 1,000 carriers, the TRA told a House subcommittee hearing

Switchless resellers are carriers that resell services on large carriers' facilities without their own switches or fiber.

■ **CompuServe Network Services, Inc.,** *a subsidiary of WorldCom, Inc., recently announced WANmail, its new service that will let users* **outsource the hosting and management of their Internet and intranet** *e-mail accounts and servers.*

The service will be based on e-mail server software from Isocor.

The software will be available later this summer in three flavors — WANmail/POP3, WANmail/Hub and WANmail/Relay.

© CompuServe Network Services: (800) 433-0389

MCI to offer managed frame relay services

Company teams with Cisco, IBM to go a step beyond simple SNA-over-frame relay migrations.

By David Rohde
Boston

MCI Communications Corp. last week began a new run at the AT&T-dominated SNA transport market with a suite of managed services dubbed networkMCI Enterprise Blue.

The key to Enterprise Blue is an offer by MCI to preconfigure host-site routers with Cisco Systems, Inc.'s Channel Interface Processor (CIP), a router add-on that provides SNA mainframe channel connectivity, obviating the need for front-end processors.

The service suite also includes a raft of existing MCI transport and management options, including frame relay circuits, traffic prioritization schemes and ongoing monitoring of Cisco routers and frame relay access devices (FRAD) (see graphic).

SNA users can mix and match the Enterprise Blue options to provide protection against packet loss and delay, MCI officials said. And because CIP supports mixed SNA and TCP/IP transport options over a unified WAN, MCI officials touted Enterprise Blue as a key step beyond simple SNA-over-frame relay migrations.

In the announcement, made jointly with Cisco and IBM at MCI's annual Network Technology Day here, MCI did not list prices for each separate option. But MCI officials conceded the full suite of services and equipment of networkMCI Enterprise Blue, which they dubbed the VPN Solutions Suite, will add significantly to the cost of frame relay.

The package will cost $700 to $3,000 per month per site, said Stephen Von Rump, MCI's vice president for enterprise services, with the higher number applying to sites with CIP-equipped routers.

For an additional $15 to $20 per end-point per month, customers can also choose Enterprise Blue's VPN+ Solutions, which includes user-account administration, service-level monitoring and troubleshooting.

A final option adds individually negotiated network design, electronic commerce planning and call center computer-telephony integration from MCI's system integration unit, MCI Systemhouse.

Until now, most carrier SNA-over-frame relay programs have involved carrier management of a FRAD either on customer premises or in the central office.

Von Rump said MCI will continue its base-managed FRAD offering with gear from Sync Research, Inc. and Bay Networks, Inc., while Enterprise Blue will be based solely on Cisco gear and IBM software. ■

Red carpet for Enterprise Blue

The VPN Solutions Suite under the new networkMCI Enterprise Blue service family includes any combination of the following components.

1. Frame relay ports and permanent virtual circuits (PVC)
2. MCI Priority PVC service*
3. MCI Peak Information Rate service**
4. Native Mode SDLC service with frame relay conversion at the MCI POP
5. Optional Remote LAN Dial access to the network for non-frame relay sites
6. Cisco FRADs or routers with the Cisco Channel Interface Processor
7. A service-level agreement matching MCI's managed frame relay offering

* Ability to designate one PVC at a site as having priority over a second PVC at that site

** Ability to choose an intermediate speed between the committed information rate and the port speed for additional protection against packet discard

SOURCE: MCI, WASHINGTON, D.C.

Networks On-Line touts new 'Net video service

By Denise Pappalardo
Houston

Networks On-Line is introducing a new videoconferencing over the 'Net service that offers users a low-cost alternative to expensive do-it-yourself videoconferencing systems.

Networks On-Line, Inc., a regional ISP located in Houston, earlier this month announced Vmeeting, a new service that lets users set up videoconferencing sessions over the Internet without deploying expensive hardware, software or dedicated high-bandwidth Internet access connections at each site.

The ISP, which is a subsidiary of Comtech Consolidation Group, Inc., is using White Pine Software, Inc.'s MeetingPoint videoconferencing servers at two of its point of presence (POP) locations. When Vmeeting users order the service, Networks On-Line sets up a virtual videoconference room for that customer on the MeetingPoint server.

Because Vmeeting users dial in to a MeetingPoint server using a standard 28.8K or 56K bit/sec modem, the need to deploy a server at each user's site with a dedicated connection is eliminated.

Vmeeting users are required to deploy an H.323 International Telecommunication Union-compliant videoconference software client, such as WhitePine's CU-SeeMe, Microsoft Corp.'s NetMeeting or Intel Corp.'s Proshare, on their PC in order to support the service.

One analyst questioned the quality of videoconferencing when using an analog dial-up modem. "When using a modem to connect to a videoconference, the best performance would be 30 frames per second. Most of the time you're lucky to get even 15 frames per second [from an analog modem], which is very choppy quality," said Greg Howard, senior analyst at Infonetics Research, a San Jose, Calif.-based consulting firm.

Vmeeting is available now for $5 to $10 per hour depending on the number of participants. For $1,000 to $2,000 per month, users are offered a videoconference room 24-7.

© Networks On-Line: (713) 467-7100

VIDEO OVER THE 'NET

ISP Networks On-Line Is rolling out Vmeeting, its new desktop IP videoconferencing service. With Vmeeting:

- Users with an H.323 videoconferencing client can connect to a Vmeeting conference room.
- Users are not required to install a videoconferencing server or room system.
- Users can have a videoconference room available 24-7 for $1,000 to $2,000 per month.
- The service costs $5 to $10 per hour depending on the number of participants.

Get more online:

- An overview of Vmeeting
- A review of White Pine's MeetingPoint

7941

www.nwfusion.com

Sprint fails to keep Internet exec from bolting

Domenick DeAngelo safely installed at IXC Communications following judge's denial of noncompete injunction.

By David Rohde

Kansas City, Kan.

A federal judge here has thwarted an attempt by Sprint Corp. to stop one of its top Internet executives from bolting to an aggressive new competitor.

Domenick DeAngelo, formerly Sprint's vice president of IP network services, has extensive experience in the carrier's frame relay, ATM and international ventures and in May left Sprint to join the emerging national carrier IXC Communications, Inc. Sprint sued DeAngelo, claiming he violated a 1995 noncompete agreement that required him to not work for another company providing "long-distance services" for 18 months.

But U.S. District Judge Kathryn Vratil rejected Sprint's demand for an injunction preventing DeAngelo from working at IXC. IXC last week formally announced DeAngelo's appointment as senior vice president of the company's Internet Services unit.

Based in Austin, Texas, IXC is one of several new broadband carriers rapidly building out their networks to take a run at Sprint, AT&T and MCI Communications Corp. To help fill its 11,500-route-mile national Synchronous Optical Network (SONET) net with traffic, IXC has been buying service providers, particularly ISPs and network integrators.

DeAngelo: *Vindicated in move from Sprint to IXC.*

IXC also holds a 20% stake in national ISP PSINet, Inc. and has been acquiring additional capacity to bring the company's network up to 20,000 route-miles by the end of 1999.

Sprint's lawsuit turned on the definition of "long-distance services" in DeAngelo's noncompete agreement. Sprint's lawyers argued that the definition should include Internet services because corporate users consider Internet and traditional data services together in evaluating WAN options.

DeAngelo's lawyers countered that Sprint offers long-distance and 'Net services out of different business units. They also said if Sprint wanted to prevent DeAngelo from helping another carrier build 'Net business, it should have changed DeAngelo's noncompete agreement as the market evolved toward IP and DeAngelo moved into the Internet arena.

DeAngelo's lawyers added that Sprint's preferred definition would make it almost impossible for the industry's executives to find work if they left their current employers. "If Sprint's requested injunction were granted, Mr. DeAngelo would be unable to work at any business which was in any way involved in the telecommunications services or long-distance business," the lawyers said in a court document.

Judge Vratil sided with DeAngelo, largely relying on a long-standing legal distinction between traditional long-distance services, which are regulated by the Federal Communications Commission, and Internet services, which are not.

DeAngelo's defection comes just as Sprint is trying to build up a head of steam with corporate value-added Internet services, such as Web hosting and managed firewalls. "They've hit the market late with those types of services," said Joe Bartlett, Internet services program manager at The Yankee Group consultancy in Boston.

Sprint announced shared and dedicated service options for its new IP Web Hosting service at the March Internet World 98 show in Los Angeles (*NW*, March 16, page 10).

A Sprint spokesman said the company is reviewing Judge Vratil's decision and is deciding whether or not to appeal. No one has been named to fill DeAngelo's position yet, the spokesman said. ■

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Edwin Mier, President
Mier Communications

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1 Stop

Jobs Lays Out Apple Recovery Plan in Seybold Keynote
Considering Apple is still in recovery, it was fitting that Steve Jobs illustrated the company's restructuring in 12 steps during his keynote speech at the Seybold conference.

With WorldCom's Crescendo, BT May Give up Beat at Concert
COMPUTERWORLD What the WorldCom-MCI offer may mean to BT.

Net Population Now 50 Million-Plus
PC WORLD online As of last month, the number of people using the Internet passed 50 million, according to International Data Corp. research.

Countdown To Collapse?
Experts are warning that the year 2000 could bring massive headaches to the end-user PC community.

Assembly Line Is the Model for Penn Mutual's Y2K Work
Penn Mutual Life Insurance Co. isn't trusting the year 2000 problem as just another information technology project.

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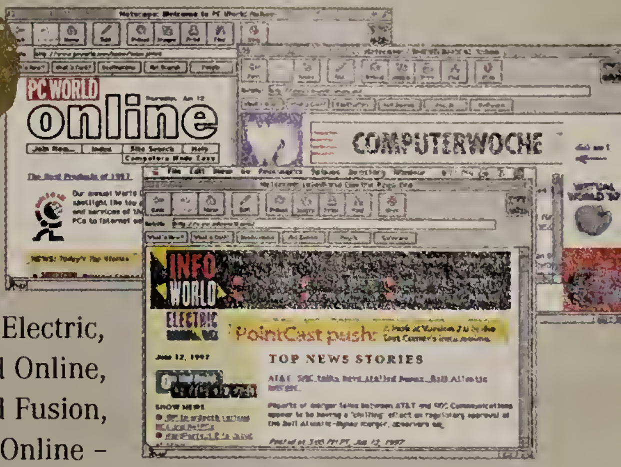

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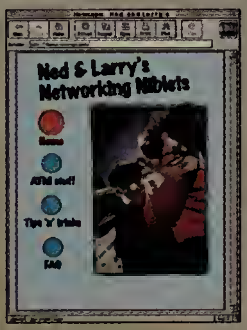

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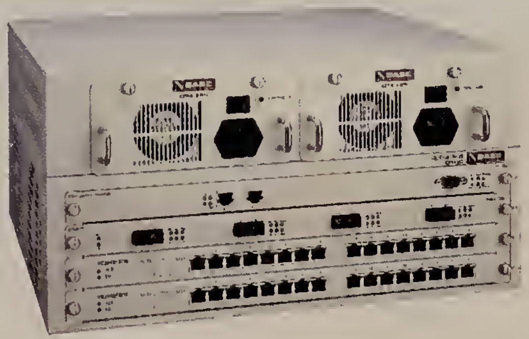

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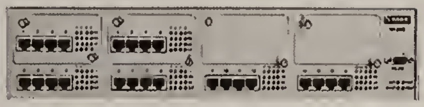

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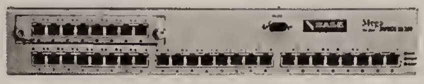

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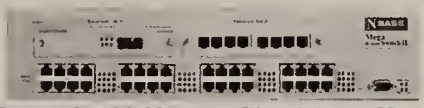

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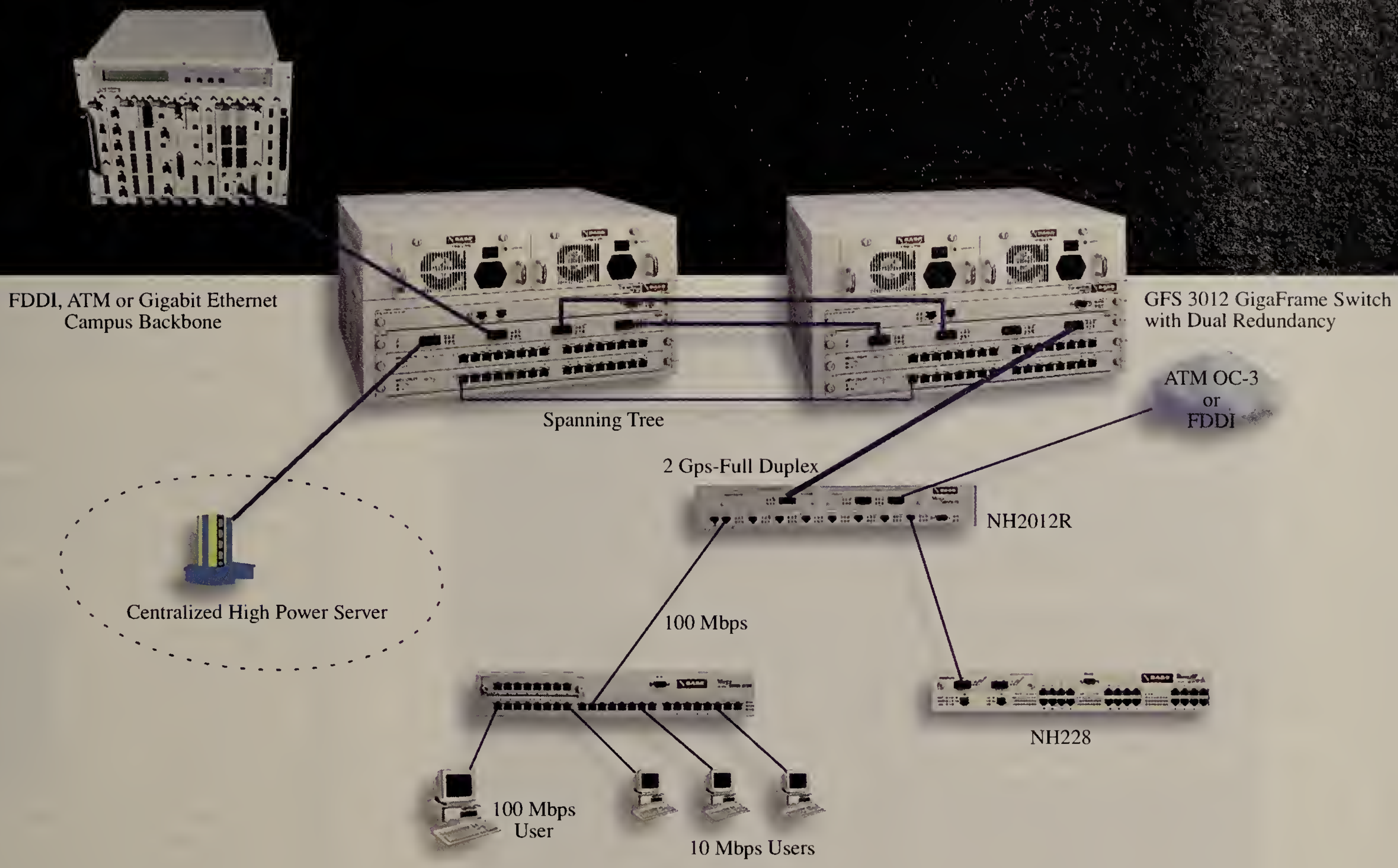

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EYE ON THE CARRIERS

Should universal service be scrapped?

It's a good thing fax machines can't read what's coming over them. If they did, the fax machine in our Washington, D.C. bureau would shut down from shock and embarrassment.

We've received endless faxed denunciations from Capitol Hill blaming just about everyone — AT&T, the Bells, Al Gore, "special interests" and the Federal Communications Commission — for user surcharges to pay for universal service.

What if the whole mess turns out to be Congress' fault? Most users are stuck with a 4.9% surcharge for interstate voice and data traffic because carriers don't want to eat the cost of new programs such as subsidized Internet access at schools and libraries.

A new study from the Cato Institute argues the problem isn't figuring out who should pay. The real problem, according to study author Lawrence Gasman, is the whole concept of universal service. Congress should just get rid of it. Among Gasman's arguments:

- The idea that universal service dates back to the Communications Act of 1934 is a myth. That law didn't use the term and did not require subsidies for rural phone lines or residential telephony in general. That idea grew up in the 1950s and was finally codified in the Telecommunications Act of 1996.
- It's not fair to blame the FCC exclusively for the huge financial scope of the E-rate program. In the 1996 law, Congress ordered regulators to ensure that schools get "special rates and other concessions" for "advanced telecommunications and information services."
- It's no wonder new local carriers compete for large customers in urban areas, not small customers in rural areas. Who could beat the phone companies' already subsidized rates?

David Rohde

- Politicians stoking fears about "information have-nots" are putting communications technology on a pedestal where it doesn't belong. "Poor people can afford less than rich people, whether the commodity in question is telecommunications or anything else," Gasman said.
- Finally, Gasman argued that making a big deal about Internet access in schools may defeat the very equalizing purpose it's supposed to serve. "Several recent studies suggest that Internet access may *increase* the gap between low- and high-achieving students because the resource is most eagerly used by white males."

I'm not sure the government's hang-up about providing universal service is all bad. After all, a public network is more useful the more people you can get on it. You should know the Cato Institute is a libertarian think tank whose studies always seem to line up just enough facts to favor government nonintervention.

Gasman's arguments are yet another corrective against politicians who insist they have to "do something" about information technology without thinking through the consequences. Gasman's study avoids regulatory jargon in favor of clear presentation. Check out the study at www.cato.org/pubs/pas/pa-310.html.

Rohde is Network World*'s senior editor of Carriers & ISPs. He can be reached at david_rohde@nww.com.*

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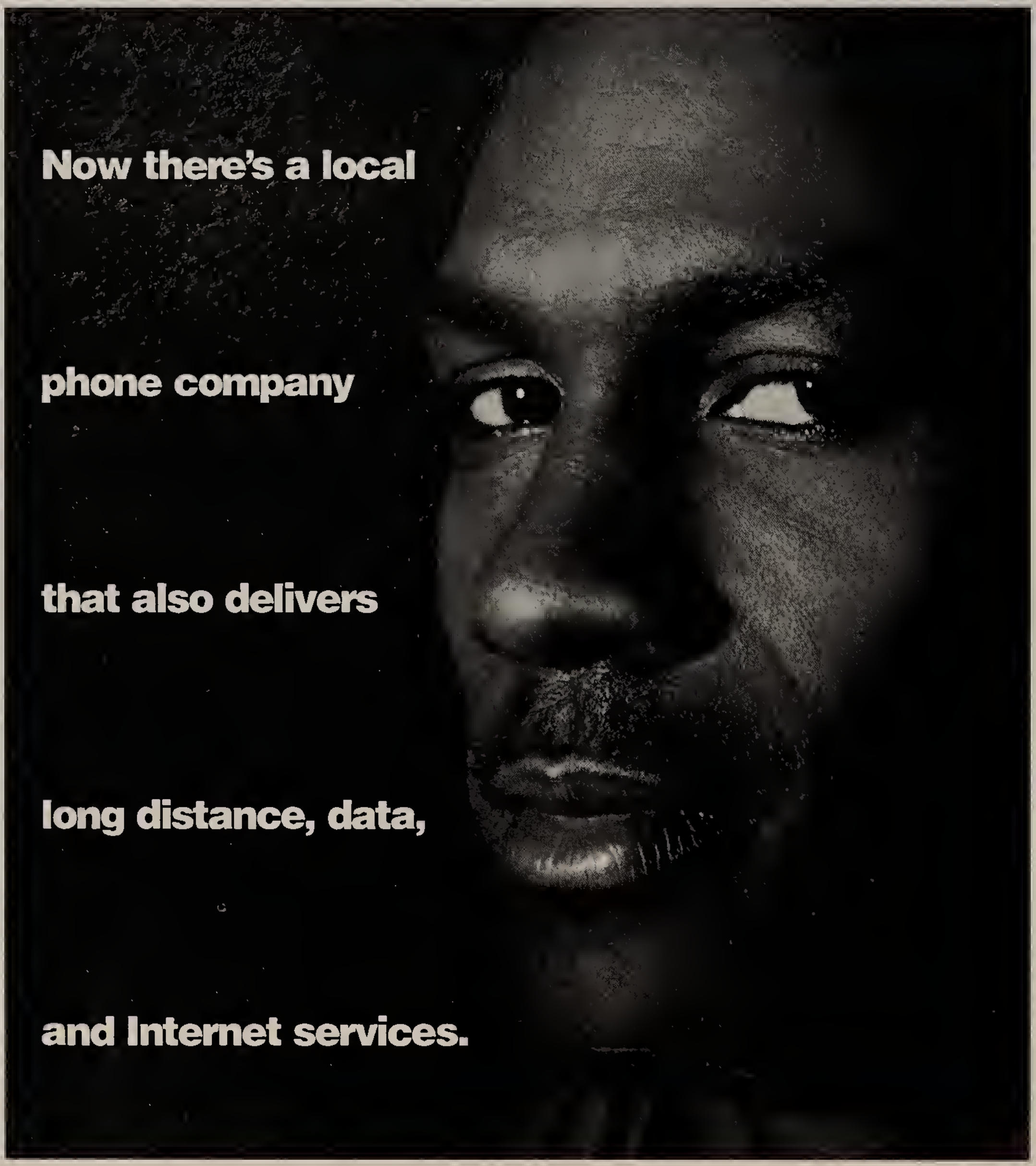

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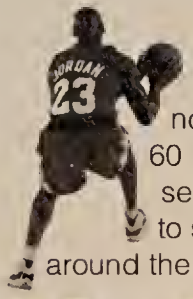

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Briefs

VeriSign, Inc. *last week* **acquired** *privately held* **SecureIT, Inc.,** *an Atlanta-based security consultancy and integrator for 1.6 million shares of VeriSign stock. SecureIT's systems integration expertise will help educate corporate customers on use of VeriSign digital certificates in IP encryption gateways and e-mail applications, said Stratton Sclavos, president and CEO of VeriSign.*

VeriSign's
Sclavos

E-mail security vendor **Worldtalk Corp.** *of Santa Clara, Calif. this week will announce that it has* **licensed digital certificate technology** *from* **ValiCert, Inc.** *of Palo Alto, Calif. The ValiCert Universal Toolkit will be incorporated into Worldtalk's WorldSecure Server 3.5 and a future version of the WorldSecure client. WorldTalk officials said the enhancements will give customers the previously unavailable ability to verify the validity of certificates from various sources that are used for encryption or digital signatures.*

© Worldtalk: (408) 567-1500

Security vendor **Network Associates** *last week filed a* **federal lawsuit** *in a California court against* **Internet Security Systems (ISS)** *alleging the Atlanta-based intrusion detection software start-up's flagship product infringed on a Network Associates patent. The software, RealSecure, is designed to systematically probe networks to check for security holes. Network Associates, based in Santa Clara, Calif., seeks monetary damages and an injunction to prevent ISS from selling RealSecure. ISS said the lawsuit "is without merit and [ISS] intends to defend against it vigorously."*

Will Sun burn Web server vendors?

By Chris Nerney

Web applications server vendor GemStone Systems, Inc. moved quickly to put its own spin on the recent acquisition of rival NetDynamics, Inc. by Sun Microsystems, Inc.

GemStone moved so quickly, in fact, that the company sent e-mail messages to journalists and analysts hours before Sun actually announced the July 1 deal, a deal which put Sun smack in the middle of the heated Web applications server/development tools market (see graphic).

"It's now a two-horse race between GemStone and WebLogic [Inc.] as far as independent Java application server vendors," said Doug Pollack, vice president of marketing for GemStone in the prepared statement.

As more companies embrace intranets and electronic commerce, Web applications servers are becoming increasingly important due to their ability to handle a large volume of queries or transactions made with back-end databases.

Many Web applications server vendors, such as GemStone and WebLogic, tout platforms for deploying Java applications.

GemStone's eagerness to reaffirm its market position — particularly vis-a-vis WebLogic — may be telling: Analysts and competing vendors said those two Java-centric companies stand to lose the most if Sun can effectively penetrate the Web applications server market.

However, analysts and vendors also said there's no guarantee that Sun — a hardware vendor — can compete and win in a software sector.

"I have real questions about Sun as a software company," said analyst Judith Hurwitz, president of Hurwitz Group, Inc. in Framingham, Mass. "There's definitely potential for them to botch it."

The reported $170 million deal for NetDynamics gives Sun the NetDynamics Web applications server, along with tools for developing applications that make database information available to Web clients.

But the company's latest server, NetDynamics 4.0, does not implement several Java enterprise standards, including JavaBeans, Remote Method Invocation and Java Database Connectivity, according to rival vendors.

"The big challenge for Sun is to replace virtually all of the NetDynamics servers if it's going to bring them into compliance [with Java standards]," said Scott Dietzen, vice president of marketing for WebLogic.

One analyst, though, said the fact that NetDynamics servers weren't fully Java-compatible may give Sun an opportunity to broaden its enterprise strategy.

"It depends on whether Sun is prepared to continue its religious zealotry about Java," said Tim Sloane, a senior analyst with Boston-based Aberdeen Group, Inc. At some point, Sun must realize that for this type of software to be used by customers, "it has to fit into the enterprise." And no enterprise is a pure Java environment, he said.

Sun's move into the server platform and tools market is hardly surprising.

"We've been planning and expected Sun to not only enter the market, but to totally commoditize the server-side Java platform," said David Butler, vice president of marketing for Novera Software, Inc., another applications platform vendor.

Sun has vigorously promoted Java on the server for the past year. Both client and server applications sit on the server, but server applications are executed on the server, with results sent to the client. Client applications are sent from the server to the client, where they are then executed. ■

Two growing markets

According to Nationsbanc Montgomery Securities LLC, the Web applications server market will grow from $67 million in 1997 to $754 million in 2001, and the market for development tools will grow from $145 million in 1997 to $700 million in 2001.

Key applications server players:

- Bluestone Software
- GemStone Systems
- Kiva Software (purchased last year by Netscape)
- NetDynamics (purchased last week by Sun)
- Novera Software
- SilverStream Software
- WebLogic

Development tools companies:

- Allaire
- HAHT Software
- Microsoft
- Sybase

Get more online:

7943

- An overview of NetDynamics' applications server
- A SilverStream FAQ
- An article on misconceptions about Java

www.nwfusion.com

Ganging up on authentication and encryption

By Ellen Messmer
Bedford, Mass.

Security Dynamics Technologies, Inc. has teamed up with Aventail Corp. to integrate the companies' two flagship products, the ACE/Server for user authentication and the Aventail VPN for encrypting data between Windows NT or Unix applications.

The integrated products, expected to ship by the third quarter, will allow users who have installed Aventail's VPN software to authenticate their identity over the Internet at a Security Dynamics ACE/Server.

ACE/Server already supports a variety of authentication methods, starting with Security Dynamics' own SecurID two-factor hardware tokens for variable passwords.

Under the licensing agreement signed by the two security firms, customers will be able to buy the integrated ACE/Server and Aventail VPN product as one bundle, and get a price break in the bargain. The ACE/Server starts at $6,000 and the Aventail VPN starts at $8,000 for 50 users.

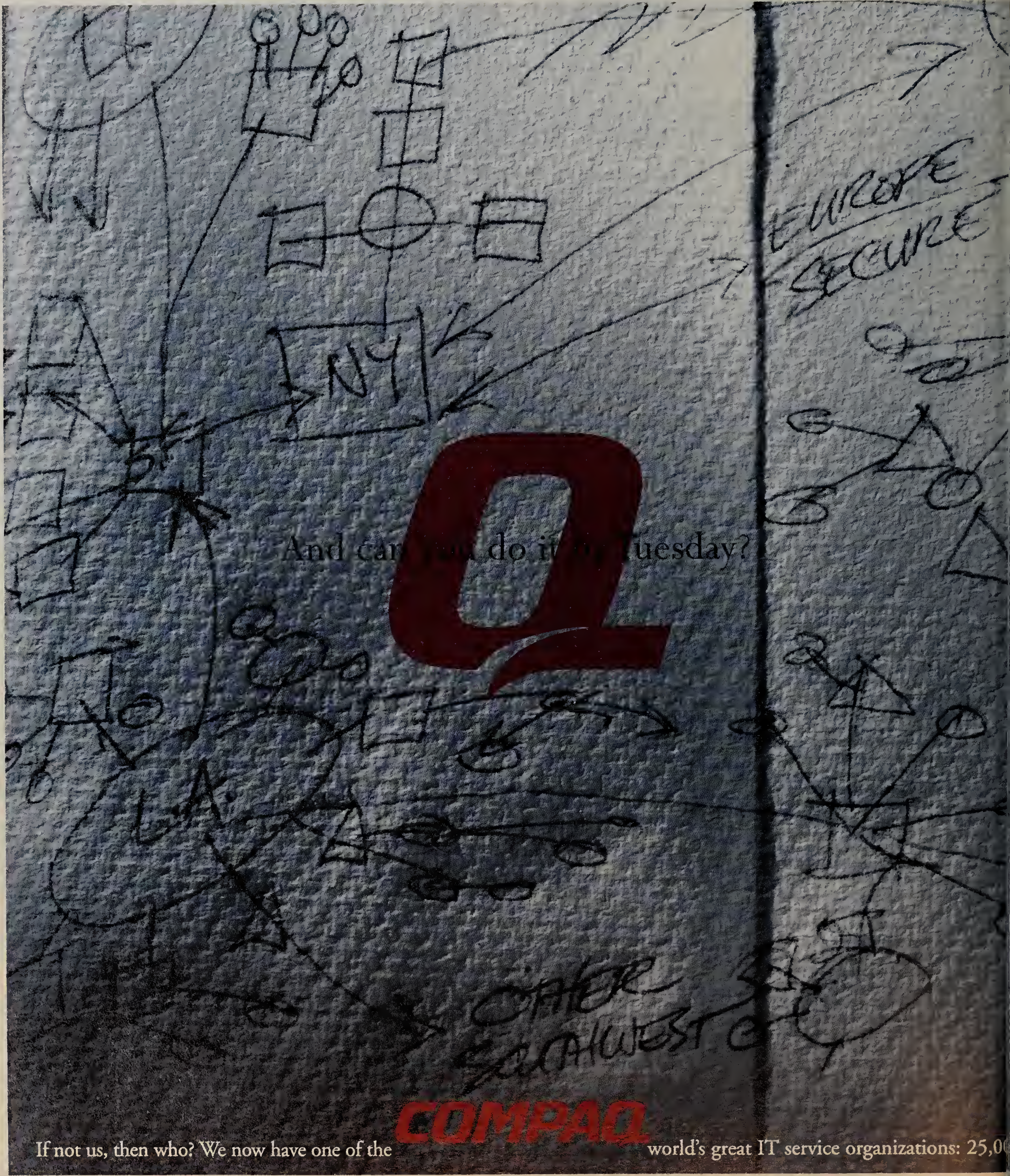
"We haven't priced it yet, but we know it's going to be less than the two together," promised Dave Power, Security Dynamics' vice president of marketing. The bundled software will be available solely through Security Dynamics sales channels.

The two security firms also anticipate working together over the course of this year to build a single management console that works for both the Aventail VPN and the Security Dynamics ACE/Server. The idea is that network managers would then be able to configure user privileges for desktop virtual private network (VPN) and Internet authentication via the ACE/Server from a single common console.

Aventail President
Evan Kaplan

"This way, the Aventail VPN can use the ACE/Server database as its repository," said Evan Kaplan, Aventail's president and CEO. "This will be a benefit to the administrator used to administering the ACE/Server."

© Aventail: (888) 762-5785; Security Dynamics: (617) 687-7000



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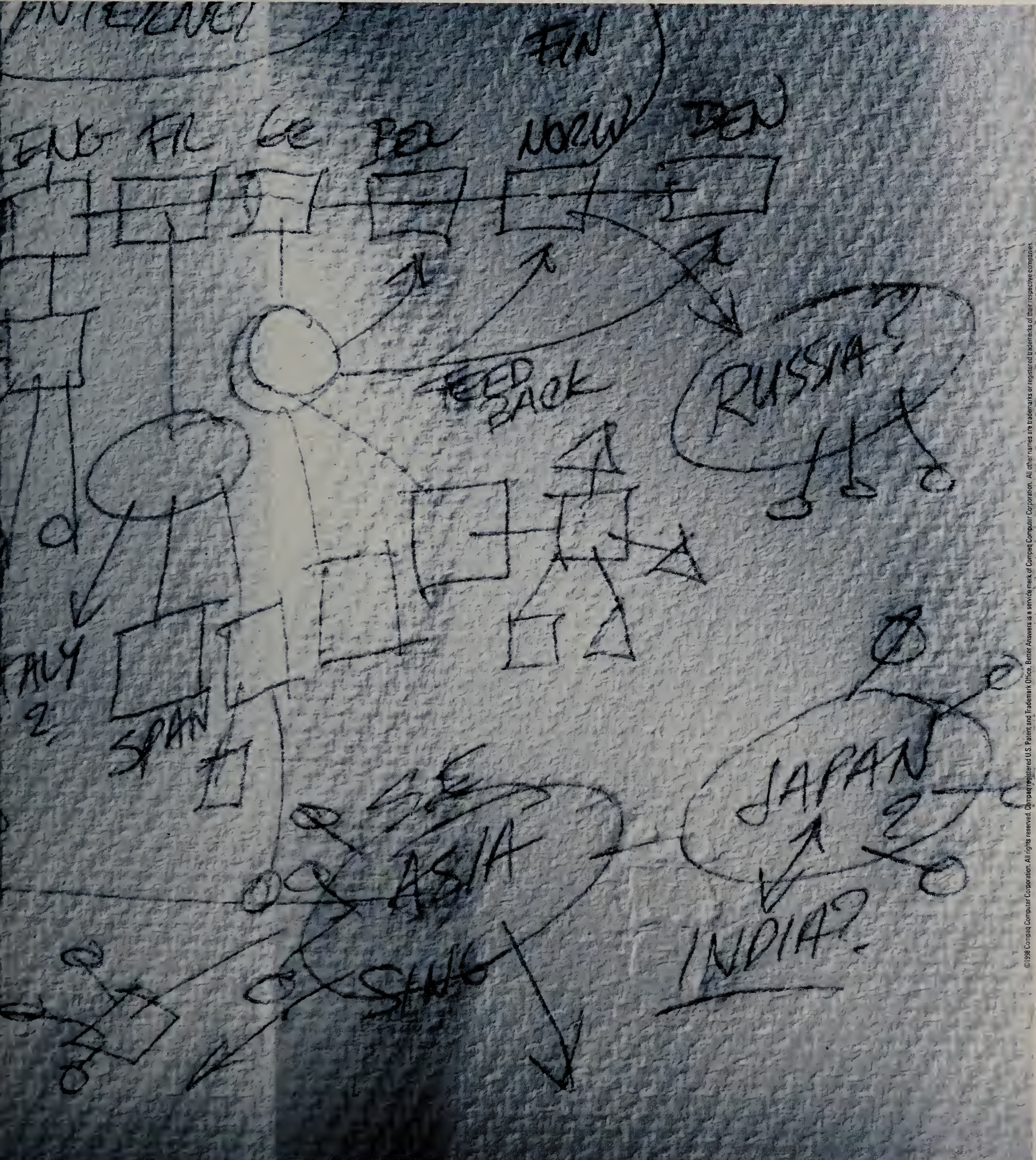

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'NET INSIDER

Magic words and real competition

Judging from AT&T's recent stock price drop, the second-guessers don't much like what they have heard about the carrier's plan to buy TCI.

There may be real reason to question some of AT&T's and TCI's Pollyanna-like beliefs that transporting voice, video and data over IP will be easy and inexpensive enough to permit the new merged organization to compete with regional telephone companies. But the deal is a good development if you ignore some of the specifics, such as the quality of much of TCI's cable network.

Ever since the Telecommunications Act of 1996, telephone customers have been waiting in vain for any sign of real competition in any part of the fixed-line telephone business. Cellular phone service is about the only segment of the telecommunications industry where actual competition has emerged — I was able to reduce the cost of my cell phone service by over 50% by changing providers.

Competition in the long-distance market is constrained by the regulation of AT&T — the company sets its rates and its "competitors" price their services a bit lower. Competition in the local phone market is constrained by the fact that there is a monopoly supplier of phone wires into houses.

Thus the AT&T/TCI deal does offer some potential for the introduction of an alternative to the phone company wires into houses, and the alternative offers hope for real competition. But this hope hinges on the merged company being able to upgrade TCI's cable infrastructure, which most commentators say is the worst of any major cable company. AT&T and TCI also must develop the IP-based magic box that will integrate voice, data and video services.

Experience has shown that a good cable infrastructure, when operated by a competent cable company, can do a very good job of supporting broadcast video and Internet services. My home Internet service comes by way of MediaOne and has been amazingly reliable and has delivered high performance. Adding reasonable quality voice service has been successful in England, so it can be done.

Scott Bradner

Fighting the often well-deserved reputation for poor customer service may be as hard for cable TV companies as getting the new technology right.

I am curious about whether there is more than the muttering of magic words behind the assertions made by AT&T engineers to stock market analysts following the announcement of the proposed deal with TCI. "IP" and "Cisco" are nice magic words, but the development of a comprehensive set of home-to-network equipment may be quite a challenge, particularly in light of AT&T's Lucent Technologies spinoff two years ago.

The pundits may be right about the specifics of the AT&T/TCI deal. *The Wall Street Journal* said the "technical underpinnings are more faith than science," but finding a way to introduce actual competition for the local phone and Internet businesses would be a boon to us all.

Disclaimer: Harvard deals with both faith and science (with a bit of law and business thrown in). But the above is my optimism.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

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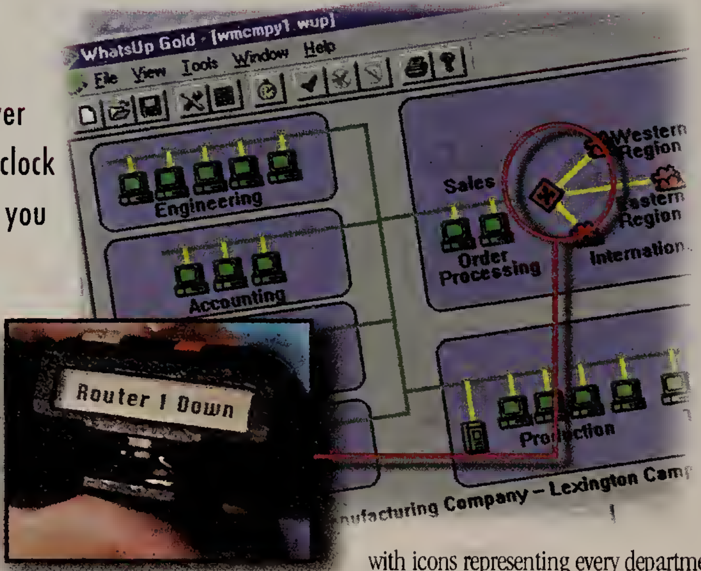

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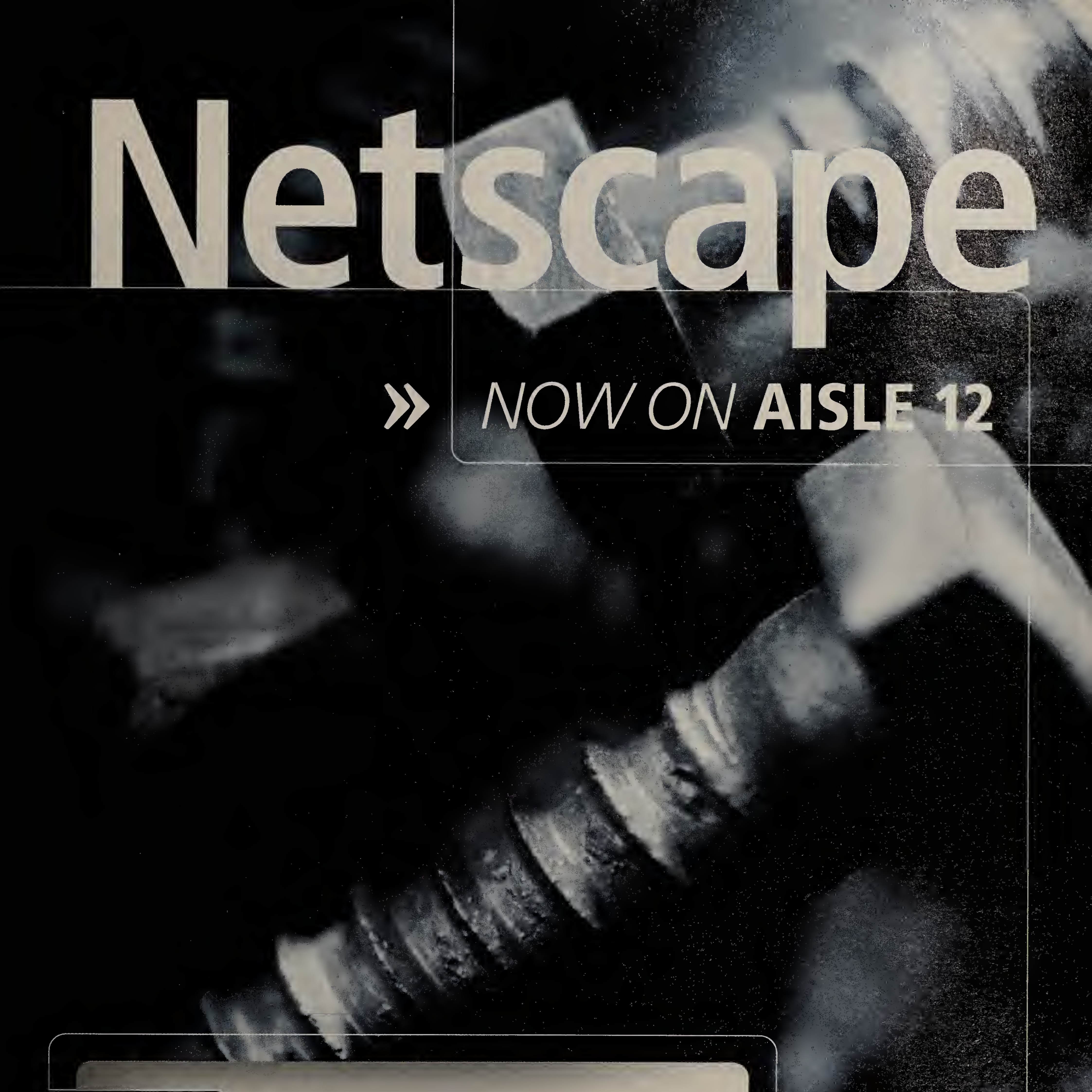

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Circle Reader Service #**24**

Site building

Hot new Web technology

As the Web shifts from rigid to active, the code to create pages provides potency and diverse features.

By Andy Eddy

In the early days of the World Wide Web — yes, starting around six years ago — those who set out to pioneer this new digital frontier put their efforts into content. Back then the Web was little more than a crudely published billboard, although it did allow for changes to type style and font size, placement of images and hyperlinks to other pages.

Today, however, the relatively static pages born from the first generation of HTML have given way to a new foundation on which the Web is built.

The result is vibrant, interactive content that's setting the tone for online multimedia entertainment, electronic commerce and new directions in work procedures.

The exciting new content exists largely because of new technologies — such as Cascading Style Sheets (CSS), Dynamic HTML (DHTML), Document Object Model (DOM) and Extensible Markup Language (XML) — that offer site designers and application developers new ways to create Web pages. The World Wide Web Consortium (W3C) standards process means that these technologies should afford universal benefits across all browser platforms regardless of their manufacturer.

CSS serves the same purpose for Web pages as a page layout program does for desktop publishing: It enables the designer to create a template that offers precise and consistent control over how a page is laid out. For example, a style sheet can define every instance of text bracketed by a particular HTML tag so that it will appear in a certain color and font.

While CSS offers a powerful command over how content is exhibited, DHTML promises to provide liveliness to Web pages through added interactivity and animation. DHTML turns Web pages into small applications.

With DHTML, a designer can create something as simple as text that changes from one color to another when the mouse passes over it or as complicated as elements such as drop-down menus or expandable/ collapsible site directories (similar to Microsoft Corp.'s Internet Explorer).

DHTML, however, is currently in flux due to a common problem of coordination: Netscape Communications Corp. and Microsoft are working on their respective definitions of DHTML.

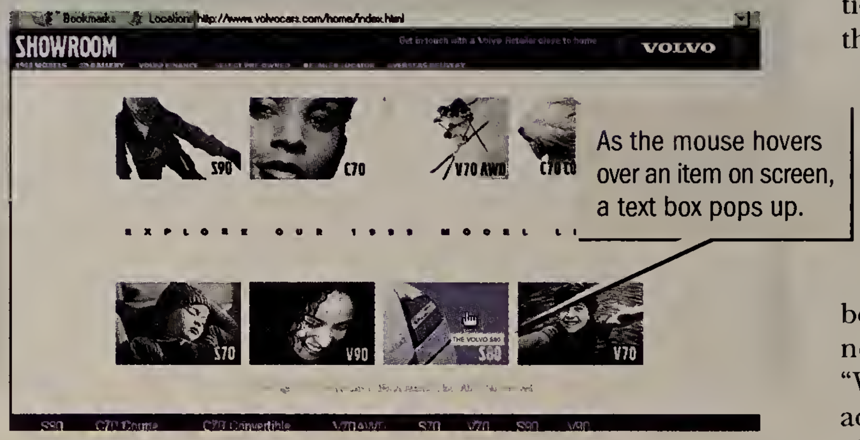
"Unfortunately, the Netscape and Microsoft versions are not compatible at all. For this reason, the W3C is currently working on standardizing [DOM] that will [help] this," said Tim Bray, co-editor of the XML specification for W3C and principal at Textuality, a Vancouver-based consultancy.

Much of the benefits of these technologies come from their collaboration, which is where DOM plays such a important role.

DOM takes on the role of air traffic controller, in that it monitors the elements of a Web page. Based on what it "sees" and relays, it can in turn trigger actions by the other technologies that alter what's presented to the user.

VOLVO SITE GETS DYNAMIC

The use of Dynamic HTML allows Volvo Web site developers to add snazzy new pop-up elements.



As the mouse hovers over an item on screen, a text box pops up.

"DOM is a definition of objects on a Web page. It defines the various objects you can control through DHTML and scripting," said Joe Herman, product manager for platform marketing at Microsoft.

"For example, DOM broadcasts how the mouse moves over an object, so DHTML knows when to do something," he said.

Another technology that interacts with DOM is XML, a language that advances how data is handled on the Web.

Many see XML as a powerful tool in the creation of the next-generation of Web-based applications, especially for handling high-end business over the Internet.

"XML provides a way to add more structure to a document and to communicate about the data with the client. It allows a standard syntax for passing data from the server to the client and uses that same syntax to lay out a document," said Eric Byunn, a group product manager at Netscape.

One key benefit to these technologies is that they enable local processing of data to save time and bandwidth through reduced server accesses.

Taking baby steps

While these technologies are still in their infancy, sites are already putting them to use.

Messner Vetere Berger McNamee Schmetterer/Euro RSCG (MVBMS), an advertising partnership based in New York, worked with client Volvo Cars of North America, Inc. to create an energetic site. For example, DHTML is used to slide menu text into place from across the page, and moving the mouse over the list reveals descriptive text of what each menu selection provides. "Most of the things that are good with DHTML are efficiencies in navigation, with collapsible menus, pop-ups and things like that," said Mans Angantyr, head of technology at MVBMS. "The user response has been very good."

Angantyr admits the balance between the benefits and risks of new tools is difficult to maintain. "We want to be sure we can take advantage of all the new technologies . . . [but] it's been kind of scary with DHTML because you realize that the standards are still floating around out there," he said.

Others are jumping in with both feet. Daniel Austin, director of development, creative services, for CNET, Inc., indicated that the company is using these technologies across many of its sites.

"Users with browsers capable of viewing style sheets will find that NEWS.COM and other sites provide a better user interface using CSS. We've used DHTML on several projects, especially in our [Microsoft Internet Explorer 4.0] push channel and our Netscape Netcaster project," Austin said.

Austin also mentioned CNET's plans for behind-the-scenes management of its content via XML — though he sprinkles his comments with calls for patience.

"As a database-driven information-publishing company, the applications of XML are manifold: organizing information, indexing, cross-referencing and storing our data, and getting it to the user in the best way possible," Austin said. "Of course, any new technology sounds good on paper. We are waiting now for software vendors to supply us with the tools to make use of the technology." ■

Technology Update

Covering: Evolving Technologies and Standards

Packet labeling standard to boost IP performance

Multi-protocol Label Switching improves IP scalability, enforces quality of service.

By Chris Baldwin

An emerging technology called Multi-protocol Label Switching (MPLS) promises to open the market for virtual private network (VPN) services and boost IP backbone performance.

Many enterprise customers would completely outsource their data networks and expand their use of new services with a VPN offering if it would cost less to maintain, had guaranteed performance, supported strong security and could be easily integrated with existing networks.

While pure ATM has the required security and performance, it lacks the crucial installed base. The success of IP in the Internet and intranets suggests that IP has the critical mass, but it currently lacks performance and security guarantees. The union of IP and ATM could open the VPN market — but only with the addition of a critical feature: automatic VPN creation.

VPN creation is needed because manual provisioning is too expensive for wide-scale deployment. MPLS provides this critical automation, fusing the strengths of IP and ATM to enable the successful deployment of VPNs.

Built for speed

MPLS is a technology designed to speed traffic through routed nets. Cisco Systems, Inc., Ascend Communications, Inc., Hughes Network Systems, Inc. and Lucent Technologies, Inc. have all recently adopted MPLS as a way to support IP intranets and VPNs that require limited network delay.

Basically, MPLS is a way to bring some of the features of connection-oriented networks to connectionless networks. For example, with a connectionless routed net, the router looks at a packet's destination address each time the packet flows through a node. The packet's route is determined by the routing tables in each node. With this method, a packet's route can't be predicted, which makes it difficult to reserve resources or guarantee quality of service (QoS). Routing table lookups are also CPU-intensive and time-consuming.

MPLS lets a router or switch assign a tag to each of its routing table entries and communicate that tag to neighboring routers and switches. When one of those devices passes a packet to a neighbor, the router or switch adds to the packet a tag associated with the routing table entry. The tag lets the router or switch identify the next hop or hops in the path without looking up the address. The idea is to let tagged packets flow end to end without forcing other routers or switches to perform any address lookups.

Security, performance promises

ATM and frame relay provide security and performance guarantees largely through virtual circuit technology. Traffic is carried in preexisting and end-to-end virtual circuits that are "Virtual Renditions" of leased lines.

Traffic forwarding in virtual circuit networks operates by switching on the virtual circuit label (either frame relay's Data Link Connection Identifier packet header or ATM's cell headers) along the preestablished paths. Virtual circuit networks are secure because they are not based on global addressing, which allows any user to probe the security of other users.

Virtual circuit networks deliver performance guarantees because inbound traffic is policed, and network resources are allocated with traffic engineering tools. Unfortunately, virtual circuit networks are also expensive to configure: a mid-size corporation requires a complex manually configured topology just to interconnect major sites, and ubiquitous connectivity for remote offices and telecommuters quickly overwhelms manual provisioning.

The Internet and the World Wide Web are a roaring success because a browser unilaterally establishes connections in the global IP address space; connectivity is automated and at will. Internet traffic is ruled by globally unique public IP addresses, while corporate IP traffic uses private addresses. Unfortunately, IP's ubiquitous connectivity also makes it unsuitable for VPNs: it lacks security and has unpredictable performance. Furthermore, the use of private addresses requires address translation for private data traversing the public Internet, or wholesale renumbering of corporate networks into the public IP address space.

'Shim' shortcut

MPLS fuses virtual circuit security and performance guarantees with IP global addressing and on-demand connectivity by automating virtual circuit creation for VPN services. On ATM or frame relay networks, MPLS creates a path over existing virtual circuit technology. On pure IP networks, such as packet over Synchronous Optical Network (SONET), a new forwarding mechanism called the MPLS "shim" header is inserted in front of the IP header. The shim header shortcuts IP routing, creating a direct path through the IP network. These MPLS paths provide the benefits of virtual circuits over a mixed IP/ATM/ frame relay infrastructure.

Baldwin is a vice president with Argon Networks, Inc., a start-up specializing in large routers. He can be reached at cbaldwin@argon.com or (978) 486-0555.

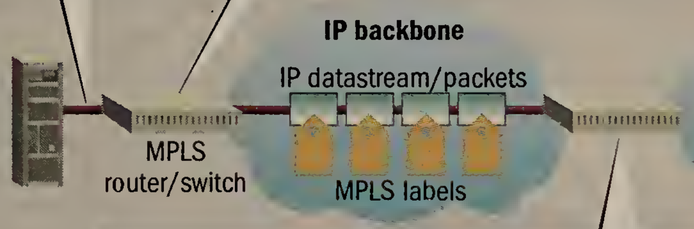
HOW IT WORKS

Multi-protocol Label Switching

The idea behind Multi-protocol Label Switching (MPLS) is to boost the scalability, quality of service and performance of IP backbones. Basically, MPLS-enabled routers or switches look at an IP datastream once, rather than multiple times, which today's routed backbones require, and quickly send the packets along to the next hop or destination.

1 IP datastream enters an MPLS device.

2 MPLS device labels a particular IP datastream once as the packets enter the net, then forwards the data to the next hop. The stream to which the packet is assigned is encoded with a short fixed-length value known as a label. When a packet is forwarded to its next hop, the label is sent along with it.



3 At subsequent hops, there is no further analysis of the packet's network layer header. Rather, the label is used as an index into a table which specifies the next hop and a new label. The old label is replaced with the new label, and the packet is forwarded to its next hop or destination.

NUTTER'S NETWORK HELP DESK

Ron Nutter, a Master Certified Novell Engineer and Microsoft Certified Systems Engineer in the Lexington, Ky., area, tracks down the answers to your questions. Call (800) 622-1108, Ext. 7476, or send your questions to helpdesk @networkref.com.

My company is installing Microsoft's Windows NT Workstation 4.0 as the desktop client for a company that has a WAN spanning 12 cities. I have run into what appears to be a performance problem: NT is taking several minutes to log on to the network. The problem has become progressively worse since the WAN connection went live. We are using Novell's latest Client for NT, IBM's Client Access and Microsoft's client. Any suggestions?

Via the Internet

I've duplicated your problem in the lab, and I have come up with a way to resolve the problem. You need to change the order of the redirector (network client) software so the software needed most is on top of the list. I found a technical information document (TID No. 2928824) on Novell's Support Connection CD that discusses the problem.

According to the document, you'll have to edit the NT Registry and obtain an updated system file, called MUP.SYS, from Microsoft technical support. The Novell TID refers readers to a Microsoft technical document, Q171386, available on Microsoft's TechNet Web site.

According to the Microsoft document, the MUP.SYS file functions as the traffic cop managing communications between NT and the multiple devices on your network. It might take a few calls to Microsoft tech support, but after you obtain the updated MUP.SYS and edit the NT Registry, you should see a performance improvement.

If you've got a nagging network problem you can't figure out, go to Network World Fusion, www.nwfusion.com. From the home page, click on Hot Forums, and then click on the Help Desk link.

EDITORIAL *insights*

You scratch my backbone, I'll . . .

Last week, I talked about the instability of the peering arrangements among Internet backbone providers and called on the major providers to establish some industry standards on interconnection.

In exploring that issue further, I talked with Hal Varian, dean of the School of Information Management and Systems at the University of California, Berkeley and co-author (with Carl Shapiro) of a new book called "Information Rules: A Strategic Guide to the Network Economy" (Harvard Business School Press). Varian has written extensively on the economics of the Internet and maintains two Web sites with a wealth of resources for anyone who wants to know how this business really works: his own (www.sims.berkeley.edu/~hal/) and the Information Economy site (www.sims.berkeley.edu/resources/infoecon/).

I heard Varian speak at Bob Metcalfe's Vortex98 conference, where he also voiced concern about the current peering system. In our conversation last week (the full Q&A is posted on Network World Fusion at www.nwfusion.com), Varian explained why the gentleman's agreements for traffic sharing among backbone providers simply cannot last.

The catalyst for change is quality of service (QoS).

Say Provider A offers a videoconferencing service, but the video traffic has to terminate on Provider B's network. Unlike A, B isn't making any money for carrying this resource-gobbling video traffic, so B has no incentive to provide the quality A promised to its customer. Simple peering works when the carriers are handling best-effort traffic such as e-mail, but it falls apart when QoS enters the picture. A and B need an interconnection agreement that compensates each fairly for the resources required to offer high-quality service.

Varian disagrees with Level 3 CEO Jim Crowe that the top backbone providers need to jointly set the economic terms of interconnection. In fact, he says, that could lead to the formation of a cartel that could make life difficult for new market entrants.

Instead, Varian says individual backbone providers should be required to establish "fair, reasonable and non-discriminatory" interconnection terms that would apply to all partners. He has urged federal regulators to require MCI and WorldCom to establish such terms as a quid pro quo for approval of their merger. Sadly, it doesn't appear that anyone in Washington is listening.

John Gallant, editor in chief jgallant@nww.com

Totally Unplugged • Ira Brodsky

After inching along, wireless data prepares for takeoff

Flashback to the beginning of the decade. Wireless data was one of the computer industry's hottest prospects. Market analysts predicted 10 million or more wireless data (excluding wireless LAN) users in the U.S. by 2000.

Today, however, there are only about one million wireless data users in the U.S. What went wrong?

Wireless data vendors wasted years trying to sell the wrong solutions to the wrong users for the wrong applications. Optimistic forecasters assumed business travelers would subscribe to low-speed wireless data services in droves — mainly to access office resources remotely. The forecasters completely missed the boat.

The mass market for wireless data, still a few years off, will be ubiquitous, "always on" Internet access for business professionals and consumers. At 56K bit/sec, dial-up modems have come to the end of their evolutionary path. New wireless data services, such as those planned by digital cellular, personal communications services (PCS) and local multipoint distribution service operators, promise speeds starting just above where dial-up modems left off at 64K bit/sec and ranging all the way up to 500M bit/sec.

That's not to say there isn't a market for today's low-speed wireless data networks. They are good for telemetry, short messaging and dispatch applications frequently encountered in vertical industries such as field service, freight hauling and public safety. And be careful not to underestimate the potential market: Wireless messaging services permit us to communicate with and keep tabs on the locations of things as well as people. There are hundreds of millions of cars, trucks, utility meters and vending machines just waiting to get connected — wirelessly, that is.

The first nationwide mobile data network in the U.S., ARDIS, did not take off as quickly as its founders, IBM and Motorola, had hoped. The company was under tremendous pressure to develop a mass market. Walt Purnell, who took the helm of ARDIS as CEO in 1995, restored employee confidence by returning the focus to vertical markets.

Early this year, ARDIS merged with American Mobile Satellite Corp. (AMSC). Together, the two networks now serve 85,000 users. More important, the combination of geosynchronous satellite- and terrestrial radio-based networks allows the companies to offer near-ubiquitous coverage.

Ironically, the biggest market for AMSC's messaging services may be fixed applications. Utility firms such as Enron are using wireless access for real-time meter reading. Security specialists such as Ameritech SecurityLink and Holmes Protection are offering faster, more reliable wireless alarm monitoring.

AMSC faces competition from companies such as Qualcomm, whose OmniTRACS satellite-based service dominates the long-haul truck fleet management market, and BellSouth Wireless Data, previously known as RAM Mobile Data. These players will be joined in 1999 by another wireless messaging operator, Orbcomm, whose low-earth orbit satellite system will cover most of the globe.

Thus, after years of excruciatingly slow growth, wireless data is finally set to take off. But just as the wireline data market is diverse, the wireless data market will be, as well.

Digital cellular and PCS carriers, leveraging the economy of scope provided by their immense and still growing mobile voice market, will create a mass market for person-based wireless data.

And companies such as AMSC, which focus on vertical markets, will help organizations monitor and control things once believed to be beyond the reach of networks.

Brodsky is president of Datacomm Research Co., a Chesterfield, Mo.-based consulting firm. He can be reached at ibrodsky@ix.netcom.com.

MESSAGE QUEUE

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification

Novell powers up

In her column "Dear Novell: Beef up your marketing" (June 1, page 51), Linda Musthaler makes three main points: First, that Novell needs to do a better job of marketing to corporate decision makers such as CIOs and CEOs; second, that we need to improve marketing to independent hardware and software vendors; and third, that we need to expand our bundling and OEM deals with computer hardware vendors. I'd like to respond with an update on the strides Novell is making in all three of these areas.

Reality Check • Thomas Nolle

Sprint's and MCI's tactical strategies fall short

In baseball, sometimes you hit a home run. Other times, you hit just a single, and that's what Sprint and MCI seem to have done with their new tactical network announcements involving ATM and frame relay, respectively.

Both vendors deserve credit for recognizing that users are changing the way they consume network services. Fixed data rate, leased-line private networks were fine when it took two years to develop a custom communications application for an IBM mainframe. But in an age of shrink-wrapped network software, a new and flexible approach is needed.

Sprint's solution is ION, an ATM backbone network flexible enough to provide economical services that range from constant bit rate voice to very bursty Internet or virtual private network services. To keep all this flexibility from being lost in a rigid, low-speed access connection, Sprint plans to use fiber optics and other technologies to expand the capacity of the infrastructure that connects users to the network. The new local loop will give users high-bandwidth connectivity to ION, Sprint says. Where Sprint seems to have missed the boat, however, is in the way this flexible network connects to the subscriber. Sprint proposes to place a multiservice access device on the subscriber's premises and connect to it with ATM private virtual circuits (PVC).

ATM isn't even credible as an application interface to a carrier service — there simply aren't enough ATM-specific applications out there. However, there are a lot of IP applications, and Sprint acknowledges this by saying it will support IP over ATM. How? With PVCs. Earth to Sprint: This approach has already been tried and is neither flexible nor tactical.

If Sprint can come up with a really inventive way of providing IP services over ATM backbone networks, ION might really offer something new to the marketplace. Without that, it's just another ATM-to-the-office strategy.

MCI dodges the ATM bullet by basing its tactical data announcement in the proven frame relay space. The problem is, frame relay PVCs aren't any more tactical or flexible than ATM PVCs. MCI proposes to solve this problem by offering frame relay in switched virtual circuit (SVC) form. Users can get bandwidth when they need it by dialing up an SVC and get rid of both the bandwidth and its cost by disconnecting the SVC when they're done.

Like Sprint, where MCI seems to have missed the boat is in the user interface. There aren't any applications that set up frame relay SVCs, which will make consuming those SVCs a bit challenging. What might have been useful is if MCI had partnered with a bunch of equipment vendors whose customer premises equipment could allow IP applications to set up SVCs to provide special paths to infrequently used destinations or provided a specific quality of service (QoS) for applications sensitive to network performance.

The Frame Relay Forum issued an SVC document years ago, and the problem then was the same as it is now: Buyers have IP applications, not frame relay applications. There are standards, such as the Next Hop Resolution Protocol (NHRP), that allow IP devices to set up SVCs. In addition, Hughes Network Systems has announced a product that would use SVCs to support the newest, hottest IP networking enhancement, Multi-protocol Label Switching (MPLS). Did recommendations on NHRP or MPLS over SVCs get into MCI's announcement? Nope.

MCI and Sprint seem to understand that users need more flexible data services to match the more tactical way they buy and deploy data applications. What they don't understand is that those data applications are IP applications — period. Public data services have to offer users an IP interface.

Comments on and criticism of Sprint's ION were directed almost entirely at the fact that Sprint chose ATM rather than IP as a backbone. That's an unreasonable standard to apply to a service whose stated mission includes insulating users from the technology of the transport network. It is reasonable, though, to criticize Sprint — and MCI — for failing to meet the first requirement of any network: to support application connections.

It appears Sprint and MCI are saying connection-oriented services such as ATM and frame relay have a big role to play in the evolution of data services overall and will be important in developing support for new and tactical data applications. OK, folks, then tell us how that's going to come about. What makes ION a more flexible IP service than routers and PVCs would provide today, Sprint? How does NetMeeting or HTML use those frame relay SVCs, MCI?

We seek simplicity in an industry that's growing more complex every day. However, this desire for simplicity doesn't justify announcements that lack substance. The simple message that MCI, Sprint and all the other carriers need to understand is this: The virtual network services that will form the basis of future applications will have to be based on IP.

Nolle is president of CIMI Corp., a technology assessment firm in Voorhees, N.J. He can be reached at (609) 753-0004 or tnolle@cimicorp.com.

Musthaler is correct that traditionally Novell has done "a fine job of marketing its products to the techies" but needs to convince the high-level corporate decision makers about the superior value of our products and support programs.

This issue reflects a change in the marketplace, with networks becoming strategic to businesses, and CIOs and CEOs becoming involved in network purchasing decisions.

Accordingly, this year Novell has refocused its advertising to explain to these executives how our network solutions deliver top-line growth and bottom-line profits.

Musthaler is also correct that Novell has not done enough in past years to market to independent hardware and software vendors. But we are now dedicating more resources to these areas and achieving impressive results.

Subscribers to our DeveloperNet developer support program have grown by 246% in the past year to over 25,000, and downloads of our developer kits have tripled since November.

More than 350 companies representing more than 500 applications are participating in the NetWare 5 developer beta program. And recently we announced new OEM bundles for our FastCache Web acceleration solution with Compaq, Pinacor, Digi International and IBM.

When NetWare 5 begins shipping this summer, Novell will power our marketing up to a whole new phase of intensity.

Our customers will see even more Novell advertising, more articles about Novell in prominent publications and more Novell programs designed to help developers and hardware partners integrate our network platform and services in complete solutions.

John Slitz
Senior vice president, marketing
Novell, Inc.
Provo/Orem, Utah

Success stories

Linda Musthaler is right, Novell needs to beef up its marketing. For some unknown reason, they haven't. So why don't we, the users, do it? Let's send our success stories to as many industry publications as possible.

A small example: Using NetWare 4.11, GroupWise, a four-modem pool managed by NetWare Connect and Cheyenne FAXserve, I have reduced the number of modems and phone lines needed by my small company.

These four modems handle all Internet browsing (through a local ISP), Internet e-mail, faxing and remote access by our out-of-house sales department.

OK, world, please contribute your examples.

Gary Later
Senior systems analyst
LiteTouch, Inc.
Salt Lake City, Utah

Readers: Do you have a Novell success story? If so, jump into the Hot Forums conference on www.nwfusion.com.

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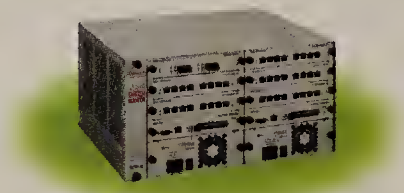

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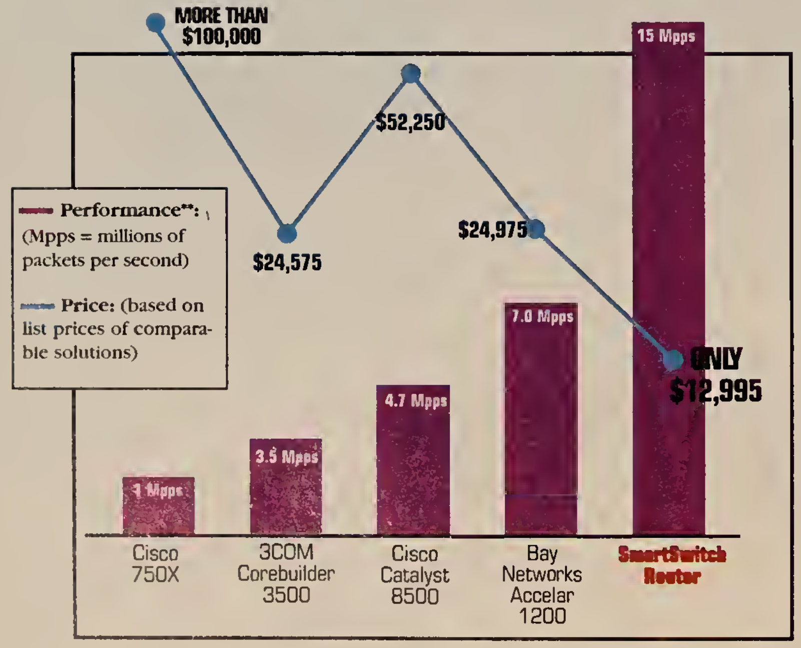

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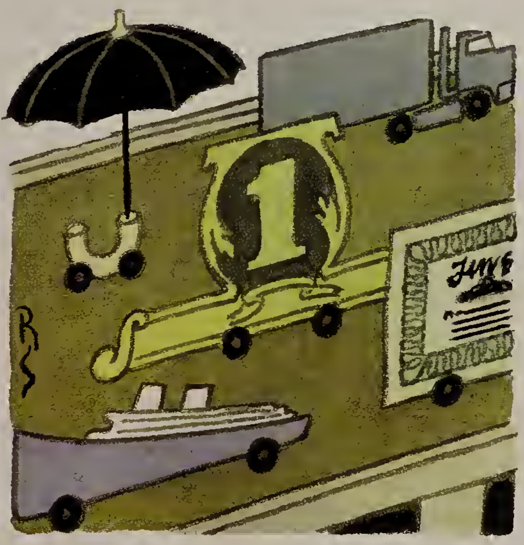
FEATURE

THE 'NET EFFECT

How the Internet is changing the face of business.

By Neal Weinberg



Some companies are using the Internet to forge direct connections to their customers. Others are creating industry-specific electronic trading platforms to balance supply and demand for goods and services. Still others are using secure Internet connections to conduct business with trading partners.

In short, the Internet is helping companies cut costs, improve customer service and attract new business. It is fundamentally changing the way companies do business in virtually every industry.

But the 'Net also poses a risk to individual companies and even whole industries that are slow to find ways to take advantage of it. It's creating new competition within and even among industries. And it's putting the squeeze on traditional middlemen and channel partners that may be cut out of new Internet-based supply chains.

The following are examples of how industries large and small are being reshaped by the Internet.

NASDAQ for truckers

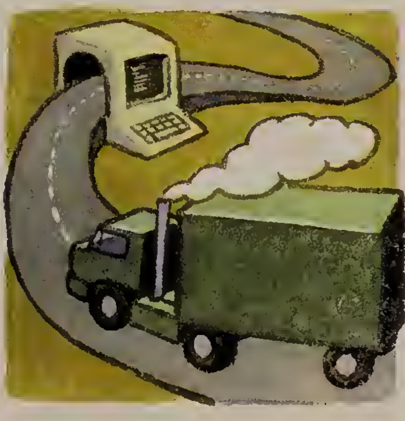
Your average long-haul trucker hasn't traded in his CB handle for an e-mail address, but several innovative companies are driving the trucking industry to the Internet with electronic marketplaces that link carriers and suppliers in real time.

One of the most interesting approaches is that taken by the National Transportation Exchange (NTE), which has modeled itself after the NASDAQ stock exchange. The big difference between the two is that NASDAQ trades in shares of Apple, while the NTE trades in truckloads of applesauce.

For example, Toro Co. in Minneapolis has a fleet of 40 trucks that deliver snow blowers and lawn mowers to stores across the country. Those same trucks often have empty space on the return trips, says fleet manager Marilyn Baldwin.

Gregory Rocque, president of the Downers' Grove, Ill.-based NTE, says this imbalance is common in the trucking industry because there's no trading floor to match buyers of truck space with sellers.

That's where NTE comes in. NTE electronically connects prequalified shippers that have loads they need to move with fleets that have extra space. For a fee, NTE sets the asking price for the shipment based on trading activity that day, and special software takes information from fleet managers as to where their trucks are going and how much space is available.



NTE software crunches the numbers and gives fleet managers a ranking of the five best deals. NTE also confirms the contract and handles payment and billing.

Baldwin logs on to www.nte.net several times a week to fill up the empty Toro trucks for the trip home. She says the big selling point of the service is that it's virtually instantaneous.

And it turns out that many of the shipments the Toro trucks bring back to Minnesota go to 3M Corp., so the system benefits two neighboring companies.

The NTE currently has 300 members, including about 200 carriers and 100 shippers.

Rocque says the organization began in 1995 with a value-added network, then progressed to telnet sessions over the Internet. The company is converting its Internet-based transaction applications so they can run on the NTE Web site, which currently serves a mar-

ILLUSTRATIONS BY ROBERT SAUNDERS

keting function.

Rocque says he expects the Web to provide easier navigation, improved user help tools, graphical reports and even push technology to alert customers to potential trading opportunities.

The Internet Truckstop, at www.truckstop.com, is another site that leverages the real-time capability of the Internet to match buyers with sellers, although it plays no role in actual transactions.

Chief Technology Officer Scott Moscrip says there was plenty of resistance when Internet Truckstop opened in 1995 because of concerns about Internet security and reliability. But now more than 6,500 companies are signed up for the $25-per-month service.

Considering that a freight carrier loses $600 every day a truck sits idle, Moscrip figures $25 is a small price to pay.

STEVEN NIEDORF

Marilyn Baldwin *uses the 'Net to help keep her trucks loaded.*

A switch in real time

Buying an electrical switch is no simple matter. Do you want a camlock, a pushwheel or a toggle? Will it be standard or reverse throw? Gold contact material or tin?

The C & K Components, Inc. catalog has 30,000 switches with enough variations and options to create 500 million combinations. It's not hard for customers to make a mistake when placing an order.

C & K addressed the problem by putting its entire paper catalog online and linking it to a "switch wizard" that walks buyers through the process of determining a part number. Scott Hunt, MIS director at the Watertown, Mass.-based company, says the online catalog makes it easier and faster for customers to order, slashes the number of incorrect orders and allows the company to update the catalog daily.

Down the road, Hunt wants to be able to reduce the $250,000 C & K spends each year producing seven paper catalogs. The original goal of the online project, which cost about $100,000, was to make it easier for current customers to do business with the company. But Hunt says the site has also attracted new business from people who surfed on in.

Cyberchemicals

You're in a jam. You need to get your hands on 500 milligrams of antibodies from an HIV-infected lab mouse, and you need it "stat." Where do you turn?

Scientists at pharmaceutical company labs and university research centers can check out www.chemdex.com, a start-up electronic marketplace that matches buyers of specialty chemicals with the more than 2,000 small companies that develop them.

Jeff Leane, CEO of Palo Alto, Calif.-based Chemdex Corp., says he came up with the electronic marketplace idea a couple of years ago. He decided to target the biotech industry because his potential customers – research scientists – were already Web savvy and there was a market need. Scientists currently rely on paper catalogs, which he says quickly become outdated.

His site provides up-to-the-minute information and handles the entire transaction, from making sure the order is shipped to the transfer of payment from buyer to seller (minus Chemdex's fee, of course).

Chemdex is a totally online venture with no presence in the physical world. As Leane puts it, "The company is the Web site."

Building a better brokerage

E-Trade, the virtual stock brokerage, makes no bones about the fact that it is targeting full-service, full-commission brokers.

Customers who open an account at www.etrade.com are offered a free copy of E-Trade's guide to online investing titled "Boot Your Broker." And in a recent speech to a roomful of brokers, E-Trade's brash CEO Christos Cotsakos said, "All those branch offices you all have are going to become fast-food outlets, so you might want to think about your career choices."

There's no doubt that electronic stock trading has taken the industry by storm. Nearly one in every five stock trades in the final quarter of 1997 occurred over the Internet. This year, that could rise to almost one in every three trades, according to Bill Burnham, an analyst at Piper Jaffray, Inc. in Minneapolis.

In just two years, online trading has come to dominate the discount brokerage world. "It's not just another channel; it's *the* channel," Burnham says.

There are now four million online stock customers, according to Chris Musto, senior consultant at Gomez Advisers in Boston. No doubt they are attracted by the average electronic brokerage charge of $15 per trade, given that full-service brokerages can get more than $100 per trade.

Because dollar volumes and commission fees are lower online, electronic trading accounted for only $685 million in commissions last year out of a total of $14.2 billion. That's not enough to pose a real threat to the viability of full-service firms, but Musto says it will change the way they do business.

In addition to a low price and real-time transactions, online brokerages offer consumers a wealth of investment information that at one time was closely guarded by full-commission brokerages. In fact, it wasn't so long ago that consumers had no way of getting stock quotes during the day; they had to wait for the next morning's newspaper. The Internet provides all the real-time information a consumer can handle.

But full-commission brokerages have their advantages, too. They offer proprietary research, access to initial public offerings and asset management advice.

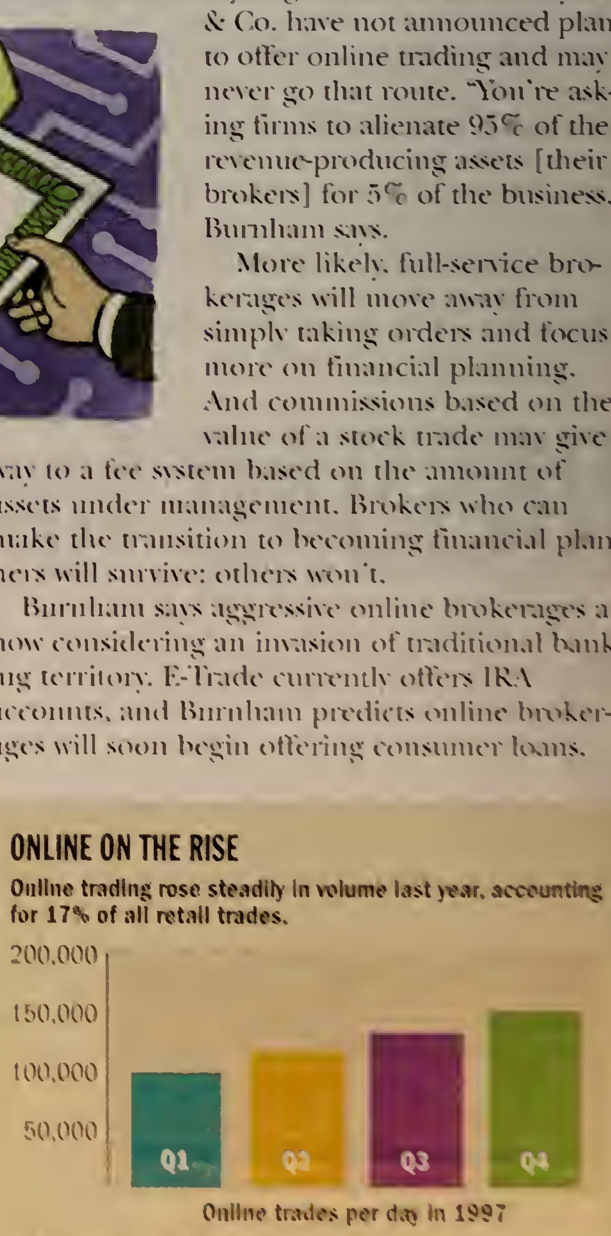
Full-service heavyweights such as Merrill Lynch & Co. have not announced plans to offer online trading and may never go that route. "You're asking firms to alienate 95% of their revenue-producing assets [their brokers] for 5% of the business," Burnham says.

More likely, full-service brokerages will move away from simply taking orders and focus more on financial planning. And commissions based on the value of a stock trade may give way to a fee system based on the amount of assets under management. Brokers who can make the transition to becoming financial planners will survive; others won't.

Burnham says aggressive online brokerages are now considering an invasion of traditional banking territory. E-Trade currently offers IRA accounts, and Burnham predicts online brokerages will soon begin offering consumer loans.

ONLINE ON THE RISE

Online trading rose steadily in volume last year, accounting for 17% of all retail trades.



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Circle Reader Service **#14**

Insurers weigh opportunity vs. risk

If you live in Minnesota, Virginia or California, you can do something residents of the other 47 states can't: Go to www.auto-insurance.com and purchase auto insurance online from the aptly named Progressive Insurance Co.

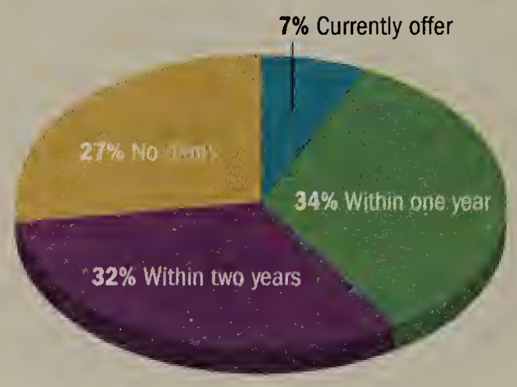
"We have embraced technology from Day One," says Leslie Youngstrom, Webmaster for the Cleveland-based company. Progressive built the first insurance industry Web site in 1995 and is now rolling out its service to additional states.

But Progressive is no longer alone. At www.insweb.com, consumers can comparison shop among several companies for auto and term life insurance, says Greg Bernardi, vice president of investor relations at San Mateo, Calif.-based InsWeb.

Still, online trendsetters such as Progressive and InsWeb are the exception rather than the rule in the insurance business, which has been slow to embrace the Internet.

TAKING THEIR TIME

When insurance companies plan to offer online sales:



SOURCE: BOOZ-ALLEN & HAMILTON, INC.

There are 4.2 million online banking customers and 4 million online stock purchasers. But Michael Pollack, a principal at Booz-Allen & Hamilton in New York, estimates only 10,000 people bought insurance over the Internet last year.

Selling online would seem like a godsend to insurers, whose core business has been flat and whose cost structure — essentially relying on agents and brokers to sell products — has not improved in years, according to a recent U.S. Department of Commerce report.

In the first year a policy is written, for every $100 an insurance company collects in premiums, it spends $139 in agent commissions and other overhead costs, Pollack says. The same policy could be sold directly over the Internet at $15 to $54 for every $100 in premiums.

Dan Carmichael, president and CEO of IVANS, an industry-owned technology services organization, says an even bigger money-saver for insurance companies is the potential to service existing accounts over the World Wide Web.

So why aren't insurers charging ahead?

There are several impediments, including potential channel conflicts with agents, fears that the Internet will force price cuts, and the costly technological feat of outfitting huge databases with a Web front end.

Then there's the cultural issue of taking a risk in a business that's all about risk avoidance.

Insurance companies have a unique business model. Amazon. com will sell a book to anybody who has the money to buy it. But insurers only want to sell policies to people they perceive to be low-risk. And assessing risk can't always be accomplished in a quickie online transaction.

In the case of auto insurance, for example, the company would likely check the applicant's past driving record; if a customer is seeking life insurance, a company physician would typically analyze the applicant's medical history.

Consumers don't seem to care about these impediments. Two-thirds of insurance companies surveyed by Booz-Allen said their customers want Web-based purchasing, but only about one-third of the companies plan to provide it within the next year.

That leaves the door open to competitors, primarily banking affiliates and stock brokerages, which are eyeing the $1.1 billion in premiums expected to be generated over the Internet by 2001. That may be a tiny fraction of the $2 trillion insurance market, but it's enough to attract attention.

Already, NationsBank, through an insurance affiliate, offers online price quotes for term life policies, and Charles Schwab & Co.'s online stock site is selling term and universal life insurance. They represent another risk that traditional insurance companies will have to assess.

The Internet: Bank on it

Wells Fargo & Co. didn't become a pioneer in Internet banking just because it was the cool thing to do. The San Francisco-based bank understood it could save a bundle by doing business online and transforming its relationship with customers.

First, the numbers. It costs a penny to process an electronic transaction compared with 27 cents at an automated teller machine, 52 cents over the phone and $1.07 directly with a branch office teller, according to accounting firm Booz-Allen & Hamilton, Inc. Multiply that differential by Wells Fargo's 300,000 Internet customers, each checking balances and performing other transactions numerous times per month, and pretty soon we're talking real money.

Wells Fargo isn't releasing numbers on actual cost savings. Susan Weinstein, vice president of online financial services, points out that savings are offset by development costs. But development costs will flatten, and the number of customers will continue to rise. Indeed, Weinstein says Wells Fargo is adding about 1,000 new customers per day to its online service.

The Internet is also providing Wells Fargo with ways to offer new services to customers. For example, as part of its online service, the bank will pay a customer's bills, whether to a department store, phone company or private individ-

Location.com

Nothing will ever replace time-honored house-hunting traditions such as walking the property and running the water in the kitchen sink.

But the National Association of Realtors (NAR) is making house searching easier by taking the 1.1 million properties in its Multiple Listing Service, which includes about 90% of all houses on the market in the U.S., and putting them online in a searchable database. The site also offers photos, maps, mortgage calculators and links to lenders.

Traffic on the site is growing fast, and the NAR has recently closed a deal for a high-profile parcel of real estate on America Online, which should boost traffic even more, says Robert Goldberg, president and CEO of the Realtors Information Network, the NAR subsidiary that runs the Web site. Two million customers per month are visiting the site, and the average home was seen more than 80 times in April, up from 28 times in January.

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ual. If the payment can be done electronically, Wells Fargo will do it. Otherwise, a company called CheckFree Corp. cuts a physical check and mails it out.

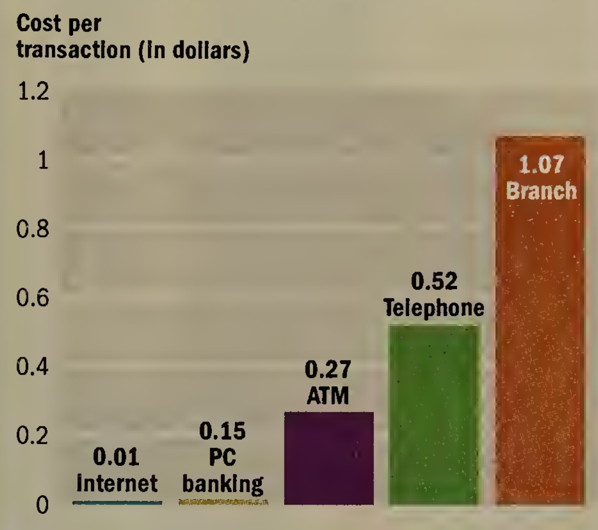
The next step is to get the department store or phone company to dispense with mailing the bill to the customer, instead presenting it to Wells Fargo electronically.

Anne Livingston, payment systems coordinator for the American Bankers Association (ABA), says electronic bill presentation over the Internet has huge potential to eliminate paper, streamline the bill-paying process and significantly cut costs. IBM estimates the total cost to process the 17 billion bills sent annually to U.S. consumers is between $38 billion and $57 billion. Online bill payment could cut that figure to between $11 billion and $18.7 billion, the company says.

Electronic banking also allows a bank to create an interactive, customized relationship with its customers that may not be the same as talking to a teller, but is more personal than a visit to an ATM or a session with an automated call center, says Laura Starita, an analyst at Gartner Group, Inc. in Stamford, Conn.

She predicts that as the number of online customers reaches a certain threshold, banks will be able to start closing branch offices.

INTERNET BANKING IS CHEAPER FOR BANKS



SOURCE: BOOZ-ALLEN & HAMILTON, INC.

ABA's Livingston agrees that Internet banking is changing the industry, but says banks will not abandon current channels because there will always be customers who want to bank in traditional ways. She predicts branches will evolve from stand-alone structures to scaled-down operations located within supermarkets or other high-traffic venues.

One thing is certain: Change is coming fast. Wells Fargo launched the first Web-based banking program in 1995. Currently, 24 of the top 100 banks in the U.S. offer Internet-based transactions, and 80% of all U.S. banks plan to offer online banking within three years, according to ABA. The number of households conducting online banking is expected to rise from the current ABA estimate of 4.2 million to 13 million by the year 2000. With 100 million households in the U.S., that means online banking will be used by 13% of all households within two years.

Lawyers online

"My wife looked worse after plastic surgery than before! What can we do?" "Our contractor left us with a mess. Can we sue?"

No, these aren't topics of upcoming Jerry Springer shows. They're from an online question and answer forum conducted by O'Keefe Jacobson, a small law firm in LaCrosse, Wis., and they show one of the ways the Web is changing the practice of law. O'Keefe Jacobson is providing consumers with free, practical legal information by answering questions on its Web-based forum.

Thomas Smedinghoff, an attorney at McBride, Baker and Coles in Chicago and chairman of the American Bar Association's Electronic Commerce Division, predicts routine legal advice will become more of a commodity in the future, while attorneys will focus on more complex cases.

Smedinghoff adds that the ease with which voluminous documents can be moved via e-mail and the speed at which communication can take place on the Web is making life easier for lawyers and even creating new business opportunities. For example, Smedinghoff says he is now able to conduct major transactions with distant clients he has never met in person.

The Internet, he says, is fast becoming "the primary mode of communication" for all but the most sensitive documents.

That's the ticket

The travel industry has taken off as one of the top consumer markets on the Internet, with airlines, virtual travel agencies and traditional travel agents in a dogfight for online sales estimated to hit $2.1 billion this year and $8.9 billion by 2002.

The big winners are the airlines, which expect online sales and electronic ticketing to slice 20% to 30% off their $12 billion annual sales and marketing tab over the next three years. Plus, the Internet is providing airlines with new ways to book unused seats and create ties to customers.

The big losers are likely to be travel agencies that fail to establish an online foothold or carve out a specialty niche.

New online-only travel agencies such as Travelocity.com, owned by Sabre Group, Inc., and Expedia.com, owned by Microsoft Corp., are driving Internet sales. Travelocity.com and Expedia.com each recorded more than $100 million in sales in 1997 by offering consumers an easy way to plow through the blizzard of airline fares and schedules and come up with the cheapest flight from Point A to Point B.

Not to be outdone, the airlines quickly expanded their Web sites to include online ticket sales, along with the sweetener of frequent flier miles.

The strategy is working. Last year, the airlines captured 48% of the $911 million in online dollars, up from 21% in 1996, according to Nicole Vanderbilt, group director of digital commerce at Jupiter Communications LLC, a research firm in New York. Vanderbilt adds that online sales are expected to grow from 1.2% of total travel industry revenue last year to 2.5% this year.

The Internet saves airlines money in two ways. First, it costs $8 for an airline to process a ticket sold by a travel agent using a computer reservation system, but only $1 to process an electronic ticket sold directly by the airline. Second, airlines pay a traditional travel agent an 8% commission per ticket with a cap of $25 one-way and $50 round-trip. The rate for an online ticket sold through an agent is 5%, with a cap between $10 and $15 one way and $25 round trip.

By luring travelers to their sites, airlines are able to make a direct connection to their best customers. For example, American Airlines, Inc. has a NetSAAver program in which the airline e-mails subscribers midweek a list of weekend flights with cheap seats. American also plans to link its frequent flier database to its online site so information on a customer's travel preferences will be available instantly.

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- **Links to sites mentioned in this story and to related trade association sites.**

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The latest online travel gambit is Priceline.com, a site where travelers can set the price they're willing to pay for a ticket to a particular destination on a certain date. Then it's up to the airline to accept or reject the offer.

With these various online efforts afoot, Randy Hancock, director of the Gemini Strategic Research Group in Boston, predicts, "there won't be a role for as many travel agents; some will continue to prosper, but they will have to reinvent themselves."

Nancy Zebrick did just that. After running a local travel agency in a Cherry Hill, N.J., shopping center for several years, Zebrick saw the writing on the wall and closed up shop. She re-emerged three years ago with an online business, All Destinations Travel, Inc. (www.alltravel.com), specializing in trips to health spas, honeymoon packages, Club Med vacations and luxury cruises. "This is my way to survive," Zebrick says.

She's doing more than surviving. Her company went from $800,000 per year in annual sales as a storefront to $5 million per year on the 'Net.

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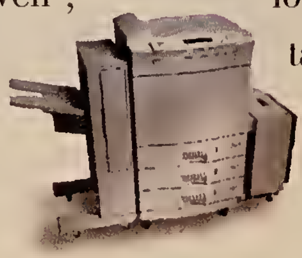

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NOVELL'S ZEN BESTS MICROSOFT'S ZAK AT CONTROLLING WINDOWS DESKTOPS.

Windows 95 chaos control

By Tom Henderson

Stop us if you've heard this before: A power user installed unapproved applications on his workstation and accidentally deleted crucial files. He wants you to fix his PC — now!

While Microsoft offers some degree of control over users' desktop configurations through the Windows 95 and NT registries, the controls are difficult to implement and easy to work around. But in recent weeks, two oddly complementary products designed to lighten the management of desktop loads have come from none other than Microsoft Corp. itself and network operating system arch rival Novell, Inc.

Microsoft's Zero Administration Kit (ZAK) for Windows is a set of software tools for centralized configuration of distributed clients. Novell's Zero Effort Networks (ZENworks) is the combination of two older Novell products, NetWare Applications Launcher and Workstation Manager, coupled with a secure remote control application for front-line help desk support and an administrative add-on to Novell's NWAdmin program. Of the two products, ZENworks succeeds better overall, thanks to its wider range of features and easier installation and deployment.

Neither product ensures zero administration for Windows workstations. And both products fail to fully insulate you from the intricacies of the complex Windows Registry. However, the products passed just about every test we threw at them (see "How we did it," page 52). The lone exception was ZENworks' failure to properly install a DOS program on a Windows client. A quick test of each product with the Windows 98 Beta 3 code showed neither product worked with it.

Microsoft's ZAK ties in to policy-control procedures outlined with Windows NT Server, although most of the techniques used for desktop controls can be applied to other networks. ZENworks can take ZAK or ZAK-like policy control and anchor it with Novell Directory Services (NDS), another reason it's the better tool. ZENworks expands the NDS schema in a way that complements the NetWare Client32. The Client32 software authenticates a user, then checks the user's attributes and modifies the desktop and operational characteristics of the workstation according to what it finds in NDS.

Anchored by directory services

ZENworks includes two user interfaces: Application Launcher and Application Explorer. Application Launcher is a customizable shell for application execution. Application Explorer looks more like Windows Explorer with enhancements, and it is somewhat reminiscent of both the older Novell Application Launcher and Windows 3.X Program Manager.

Net Results

	PROS	CONS
ZENworks *Novell, Inc.* *(800) 453-1267* *www.novell.com/products/nds/zenworks* $39 per user; no charge for ManageWise licensees	▲ Easy to understand for NetWare administrators ▲ Includes application distribution and installation	▼ NetWare-specific
Zero Administration Kit for Windows *Microsoft Corp.* *(800) 426-9400* *www.microsoft.com/windows/zak* Free	▲ Increases desktop control dramatically ▲ Can be made difficult to thwart	▼ Requires intensive design and planning ▼ Performs extensive registry manipulation ▼ Lacks application distribution component

Included with ZENworks is snAppShot, a product that takes a snapshot of a system before and after you install an application. You can use the data file that details the changes to automatically apply the same changes to other workstations across the network.

The proposed benefit is the ability to create machine-independent profiles that allow users to roam from machine to machine while always seeing the same application set wherever they work. The goal is to enable a user to log on to a new machine and have ZENworks determine who it is. ZENworks then looks into NDS, determines which applications the user should have and installs any that aren't already on the desktop.

We found roaming profiles worked well, even between Windows 95 and NT workstations. When we hadn't previously used a given NT workstation, the NetWare logon process discovered that fact, made us a user of the workstation, and then downloaded profiles that allowed us to print to the correct queues without intervention.

We tried to use snAppShot to profile the installation of Adobe Capture Version 3.0 under Windows 95. We found it frustrating that snAppShot crashed three times during the attempt. Finally, when we attempted to install Capture on a workstation that had never before been used, it took. The problem seems to be specific to Adobe Capture 3.0, but because Adobe uses InstallShield, a common application installation program, we feared other products that use InstallShield might also have problems until this bug is fixed. Novell's tech support could offer no immediate solution to the problem. We installed the application under Windows NT Workstation with no difficulty.

Policy control is flexible in ZENworks, but there are ways of avoiding it. We were using a Novell network client logon, but we found we could hack and install a different network client that didn't work with ZENworks, which could foil your administrative control. A policy control from the ZAK CD-ROM was able to prevent us from changing clients.

ZENworks also contains a help desk request applet that's designed to dovetail into Novell's ManageWise support and management software system. The applet can find support contact infor-

Score Card

	Control floxibility (40%)	Ease of deployment (30%)	Features (20%)	Installation (5%)	Documentation (5%)	Total
ZENworks	8 x .40 = 3.20	8 x .30 = 2.40	8 x .20 = 1.60	7 x .05 = 0.35	5 x .05 = 0.25	7.80
ZAK	7 x .40 = 2.80	6 x .30 = 1.80	5 x .20 = 1.00	4 x .05 = 0.20	5 x .05 = 0.25	6.05

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the total score.

mation via NDS and contains a remote access program that allows support personnel to help solve desktop usage problems.

Each Windows 95 and NT workstation on the network required new client software. We then added an entry into NDS for all the workstations; by highlighting a group of workstations, we could do mass imports of client information to NDS. The beauty of an object-oriented directory service such as NDS is that we could update policies en masse, and then control workstations immediately after rebooting them. ZENworks runs only on NetWare 4.1 and newer servers, and supports only Windows clients within an NDS domain.

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Sergeant ZAK

ZAK offers two modes, TaskStation and AppStation. TaskStation clients boot into the Internet Explorer application instead of the Windows interface and are limited to using applications that run in the browser. The goal is to lock down the desktop configuration to prevent users from making changes.

TaskStation offers many ways to limit end-user access to the underlying operating system. You can remove the Run command from the user interface in TaskStation and hide selected or all folders, the taskbar, the Find command and My Computer. You can also restrict Network Neighborhood in several ways to limit access to otherwise visible network resources. In Windows 95, you're supposed to be able to restrict registry editing and MS-DOS access, but we figured out a way to get around those barriers.

AppStation administration is more involved because the user interface isn't constrained to Internet Explorer. The biggest advantage to AppStation is that it can control what users see on the Start menu and what they can access on the disk. AppStation has tools to suppress registry editing, and it can prevent users from invoking Windows' Task Manager to kill the process that controls the suppression.

Server-side administration provides several possibilities for group control to be replicated and partitioned through the NDS structure — a plus in WAN environments. Neither TaskStation nor AppStation make it possible to lock down Windows boot configurations, but both can limit end-user access to specific folders and drives. Both packages also let you create classes of users and develop gradients of desktop controls to suit differing needs.

To achieve strong administrative controls with ZAK, you need to experiment with user and group controls to balance the level of control you need vs. the flexibility you want. Much of the control offered comes via the use of registry hives, which are slices of the system registry that are imported to the workstation at logon. By contrast, ZENworks uses a logon-time download coupled with properties in directory services (asserted by individual or group characteristics) to assert control over the desktop.

ZAK is designed for deployment on newly installed PCs, although with a bit of work, we found it could be used on already deployed Windows 95 and NT 4 workstations. There are two ways to deploy ZAK: read the instructions and design the suggested controls, or use a demo setup that walks you through the process of installing Microsoft Office 97 as a shared server-based application. The installation process suggests helpful (but not mandatory) installation and subsequent management steps be obtained from the Office 97 Resource Kit and the Windows NT Server 4.0 Resource Kit. Fortunately, we had both.

ZAK deployment involves three steps: server installation, initial workstation setup and client/user administration. We easily installed our test clients after the server, and we modified our Windows NT Server Primary Domain Controller user profiles as suggested by the ZAK online documentation. To complete the steps, you create a directory structure and copy boilerplate user profiles to the server.

The strongest rope

With ZENworks, Novell hits Microsoft in one of its weak spots — directory services, or rather the lack of one. While ZAK provides low-level control of user desktop configuration, it doesn't scale well for large organizations. For example, Microsoft strongly recommends replicating the ZAK infrastructure in multiple-domain NT networks — a tedious and often manual procedure. This problem doesn't exist in a network running under NDS because resources are partitioned and replicated automatically.

Unlike the more automated ZENworks, ZAK is a kit, and as such offers great flexibility at the cost of a learning and experimentation curve.

ZENworks can dovetail nicely with the controls offered in ZAK. For example, the registry controls needed to keep users from accessing local CD-ROM drives can be made part of the ZENworks details that follow users from workstation to workstation. These products do not thwart each other in any way and are actually complementary. Perhaps it takes two products — one pushing and one pulling — to do the job of corralling the desktop.

But based on our experience, Novell has a head start it's not likely to lose, even after NT 5 arrives.

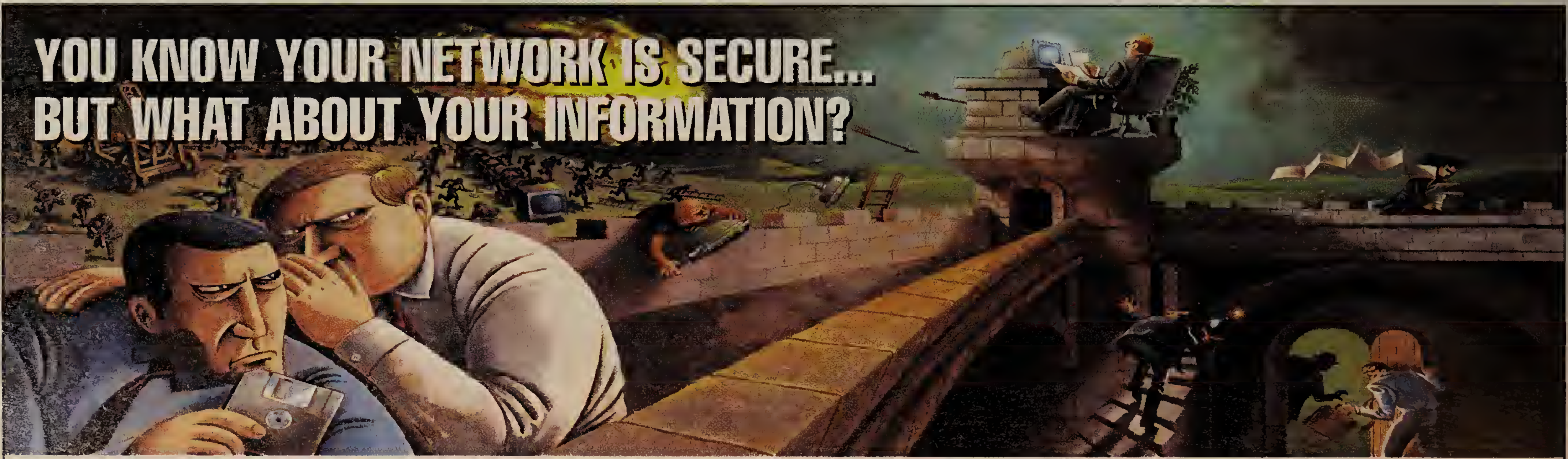
Henderson is a systems architectural consultant in Indianapolis and the author or co-author of 12 books on network hardware and software. You can reach him at thenderson@compuserve.com

How we did it

We installed both products on the same local network, with clients that included various Compaq Computer Corp. workstations. We used two servers, a Proliant running Windows NT Server 4.0 SP3 and a Proliant with NetWare 4.1 (with various patches) connected to our lab's Fast Ethernet switch.

We installed both products on servers and clients, and tested their abilities to limit users' access to operating system components. Specifically, we attempted to do the following:

- Limit drive access and Start menu access
- Install and execute a DOS program
- Limit execution of programs not on the Start menu
- Thwart logon (post-boot)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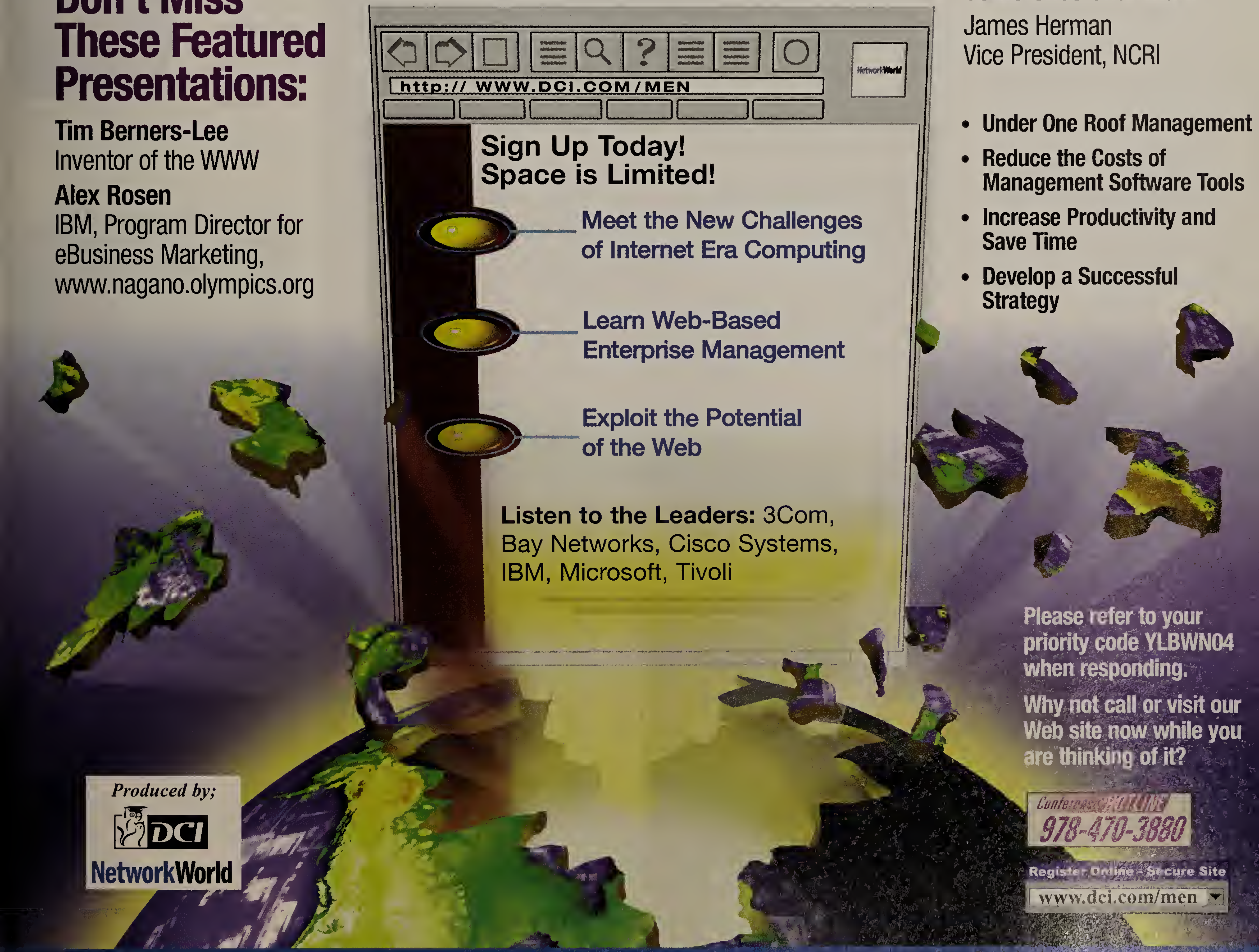

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We have you under surveillance

Most corporate crimes are inside jobs. But how do you catch a thief who's a trusted member of your organization?

One way is the aptly named Gotcha program from Prescient Systems. This nifty motion-activated software, in concert with a video camera, watches over your assets, records moving images and alerts you the moment trouble occurs.

Gotcha detects motion in the camera's field of vision. An adjustable sensitivity feature lets you decide how much motion will trigger the software to start recording onto an attached PC hard drive. You can also choose to exclude certain visible areas so, for example, a monitor with a dynamic screensaver won't be tracked.

I set up Gotcha in my office and caught only a janitor doing his job. I also installed it at home to try to figure out which dog was violating the terms of his housebreaking agreement on the carpet.

The program not only records what goes on in a room, but also tells you about it as the action is happening.

If you choose, Gotcha will page you immediately or dial in to a remote computer and transmit the video files it's creating.

Like a digital sentry, it can also play a sound file and minimize the currently active Windows application if someone is approaching your private workstation — a useful trick to keep colleagues from seeing sensitive material you're working on. Finally, Gotcha can take time-lapsed photos so you can chronicle the construction of that building next door.

I liked Gotcha a lot. I tried a comparable product, Syncronys Softcorp's EyeCatcher, with dismal results. EyeCatcher has a highly stylized interface that makes the program hard to use. I never got EyeCatcher to work, despite calls and e-mail to the company's clueless technical support staff.

Quick takes on high-tech toys by Test Center Director Lee Schlesinger

Net Results

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Awesome
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Cool
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BOTTOM LINE

An excellent way to visually monitor any area.

Though Gotcha works great, be prepared for unpleasant surprises. I sure got one.

When I first set up the camera to point to my workspace, I configured the software with my back to the camera. I was devastated to discover a visible bald spot on the top of my head. My faithful wife assures me that it's just an optical illusion caused by the lighting in my office. I choose to believe her. ■

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Hitting the hot spots

Minefields and political insurrections make work more challenging for some network managers.

By Loretta W. Prencipe

Talk about a hostile work environment. On more than one occasion, Debbie Galarowizc had to don a flak jacket and helmet and navigate her way through land mines and booby traps to visit end users.

Galarowizc was in Bosnia in late 1996 and early 1997 training U.S. peace-keeping troops in network operations. As group leader for federal researcher Mitre Corp.'s Army Systems European division, Galarowizc designed the network for the Office of the Deputy Chief of Staff for Intelligence of the U.S. Army Europe.

Dressed for success *in fatigues, Debbie Galarowizc's job at Mitre Corp. took her to Bosnia to train U.S. troops.*

"The people I was primarily supporting were counterintelligence," Galarowizc says. She helped the troops automate and secure the collection, processing and dissemination of intelligence data.

Even as a civilian, Galarowizc learned to march in formation, eat military style and move gingerly beside active minefields. She traveled to remote locations in armed convoys and spent a tense night in Sarajevo awaiting the local reaction to Bosnia's first elections. "It remained calm. But we heard a lot of gunfire because the people were celebrating," she says.

As technology and business go international, some network professionals' jobs are taking them to political hot spots around the globe.

IT companies such as Science Applications International Corp. (SAIC), an IT services company, have corporate interests and contracts throughout the world — some with significant risks involved, says Keith Nightingale, head of security for the San Diego-based firm. "We send travelers from the states throughout the world every day. On any given month, over 500 international trips are taken."

Nightingale advises U.S. employees about personal safety abroad, coordinates ground transportation and hotel reservations, and works closely with local security firms in a number of countries. He also continuously monitors the political and economic landscape of areas where SAIC has interests.

Safety comes first

Not all IT professionals have security offices behind them. As managing director of international sales for Baltimore-based network security firm Information Resource Engineering, Inc., Ted Ritter logs a lot of frequent flyer miles. He keeps abreast of international developments and hits the State Department's travel advisory Web site.

Ritter twice postponed a business trip this year to Jakarta, Indonesia — the first time because of forest fires and the second due to political tensions.

It doesn't take a political uprising to create a dicey scenario. Just ask Brett Galura, network manager for AES Corp., a global power company in Arlington, Va. He was dispatched to his firm's office in Pavlodar, Kazakstan, to implement e-mail.

Two armed soldiers singled out Galura as he walked across an airport tarmac in the former Soviet republic. They took him to a dimly lit room and locked the door. The soldiers didn't speak English. "It was one of those moments — two armed people speaking Russian. I kind of wondered what I was doing there," he says.

The soldiers resorted to gestures to communicate with Galura. He showed them his return plane ticket and pointed to the calendar to show he would be in Pavlodar for less than two weeks. They eventually released him. Galura believes his armed hosts wanted to see proper working papers that he would have needed had he been on an extended trip.

Pakistan is another one of Galura's business destinations. He traveled to a remote office to deploy e-mail and flew out of Karachi shortly before American Union Oil executives were gunned down last fall.

"Safety is definitely a large blip on my radar screen," Galura says. However, his concerns aren't serious enough to prevent him from traveling to exotic locales on business. He tries to be careful where he goes, stays in public places and avoids political rallies and demonstrations.

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Even in peaceful countries, Americans often are targeted for crimes. "Just look at the newspapers and statistics," Nightingale says. "When it comes to kidnappings, bombings and extortions, any U.S. citizen or international business traveler is at risk."

A 6-foot-4-inch blond who weighs more than 200 pounds, Dave Cox stands out even in SAIC's San Diego office. When his position as executive vice president of commercial IT applications takes him to Bogota, Colombia, he's extra cautious. "With the raft of kidnappings of American executives, it's always on people's minds. You are potentially a target," he says.

When he goes to Colombia, Cox follows SAIC's instructions exactly. A private driver greets him at the airport and takes him to a hotel chosen by SAIC's regional security company. Sightseeing isn't on the itinerary — Cox spends his time at the hotel, in the private car or at work. "I'm comfortable with the security arrangements," he says.

Along with personal safety tips, Americans traveling to volatile areas gain an appreciation for the technology and working conditions back home.

Before Galarowizc went to Bosnia, she often thought any network snafu soldiers reported was user-related. "I wasn't sympathetic," she says. Then she got a taste of Bosnian reality and saw the field conditions and blown-out communication lines. "It's not at all like you imagine it would be. Some of the soldiers were using computers sitting in the dirt — no desk or chair, no communication lines," she says. Even worse, the technicians lacked trouble-shooting tools such as router tables and other diagnostics Galarowizc took for granted.

"It was a real eye-opener," she says. "Now I just try to look at things with a different perspective."

Prencipe is a freelance writer and attorney in Springfield, Va. She can be reached at LWPrencipe@mailexcite.com.

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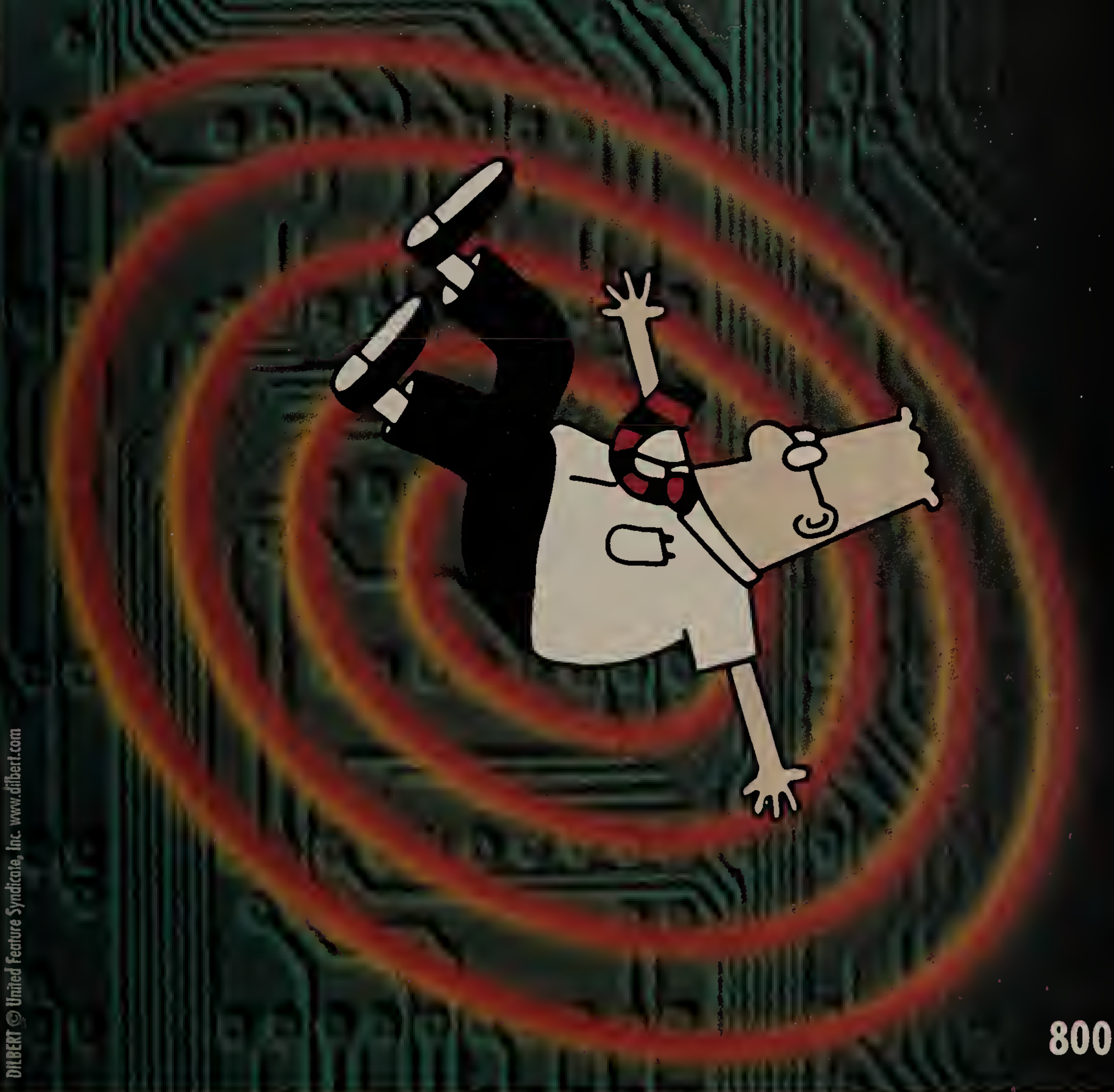

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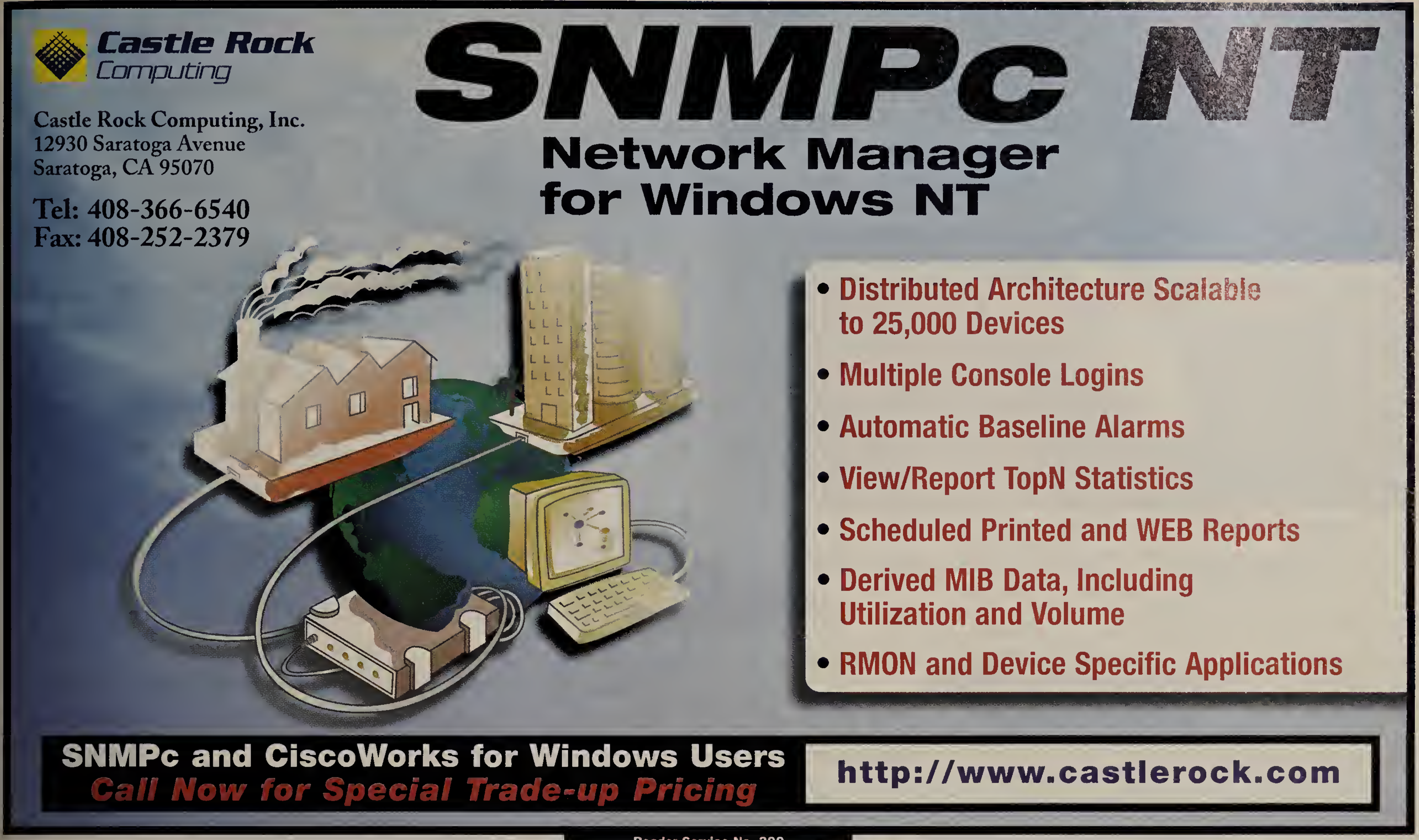

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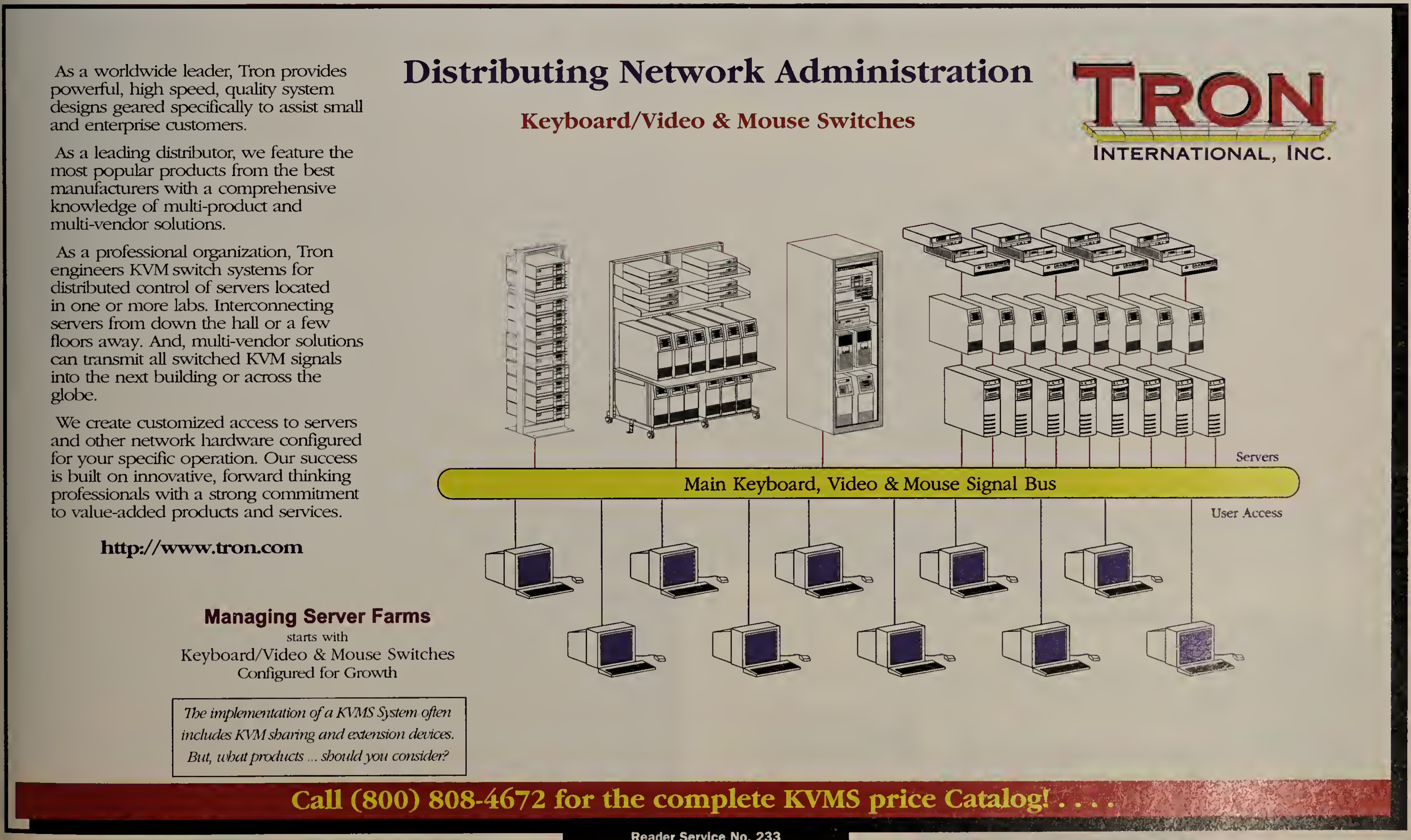

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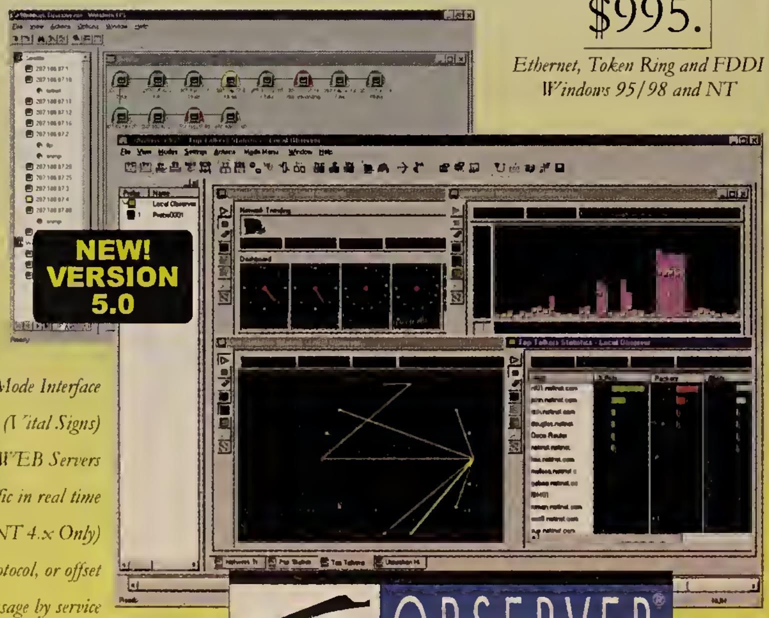

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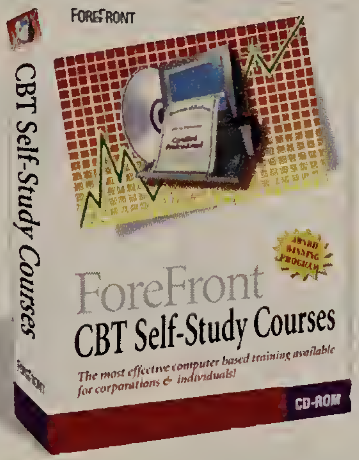

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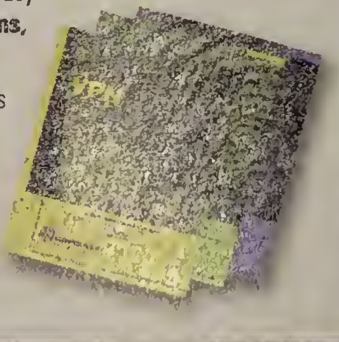

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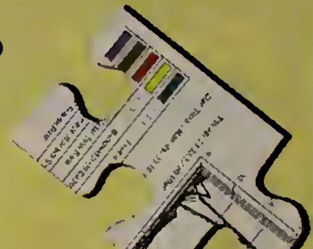

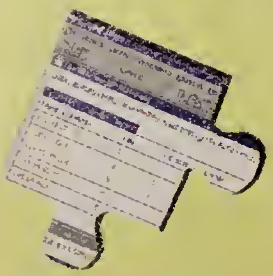

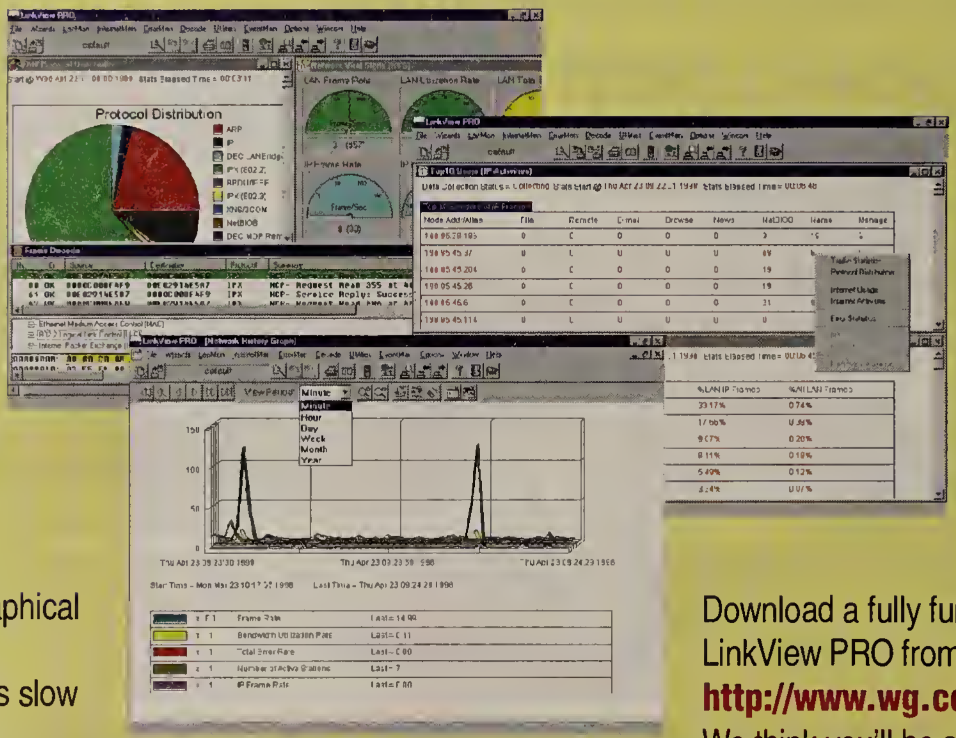

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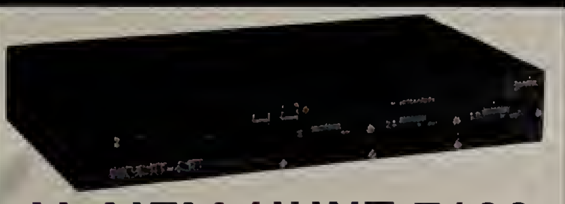

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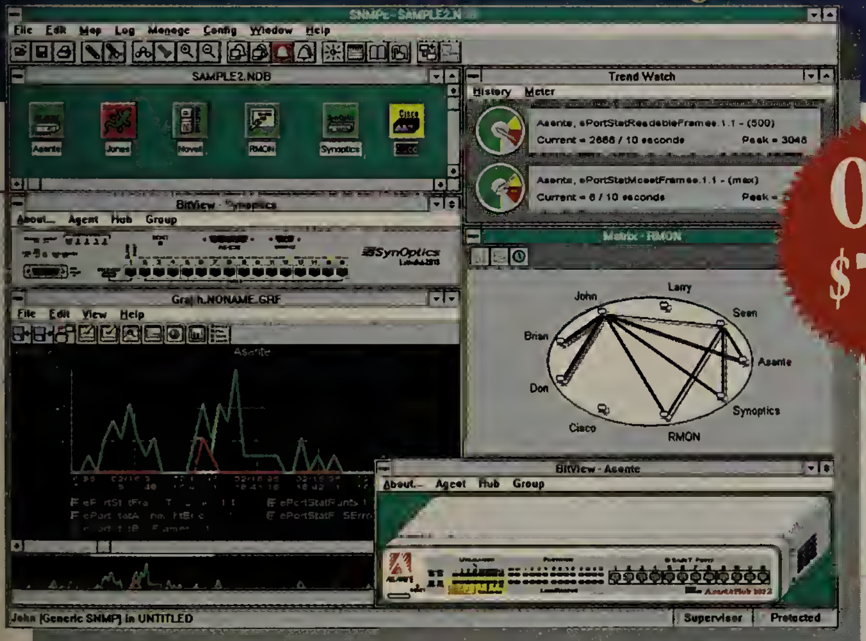

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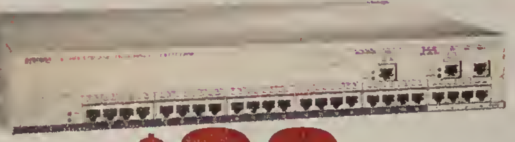

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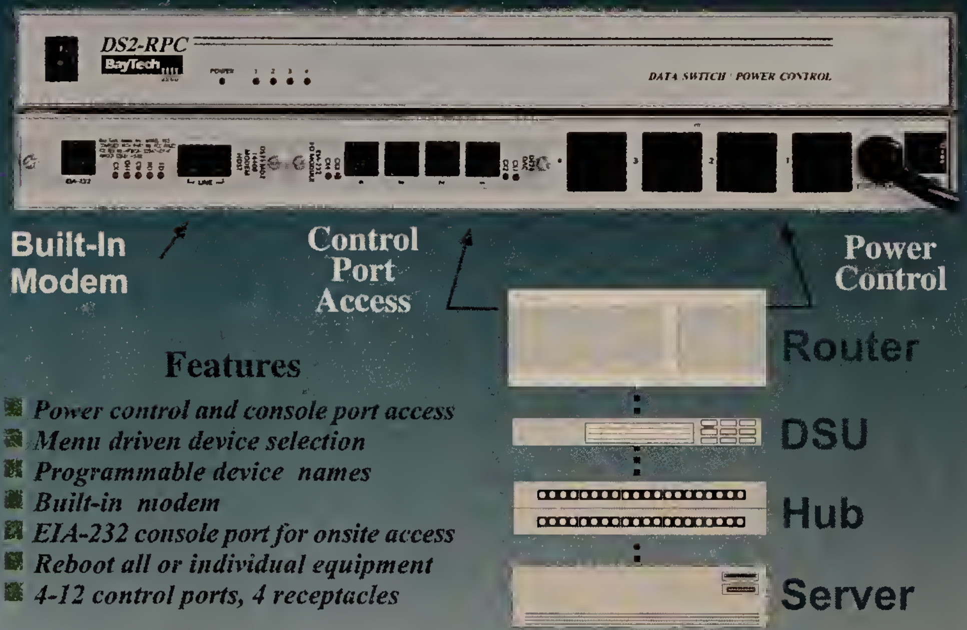

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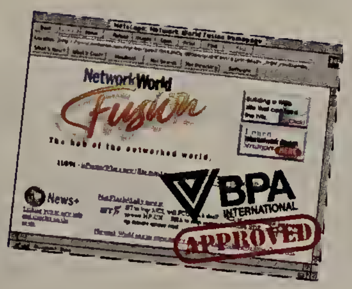

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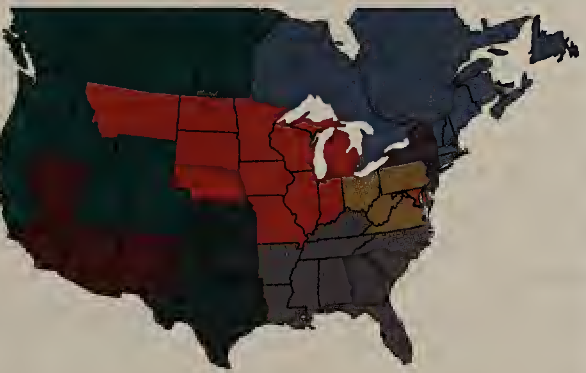

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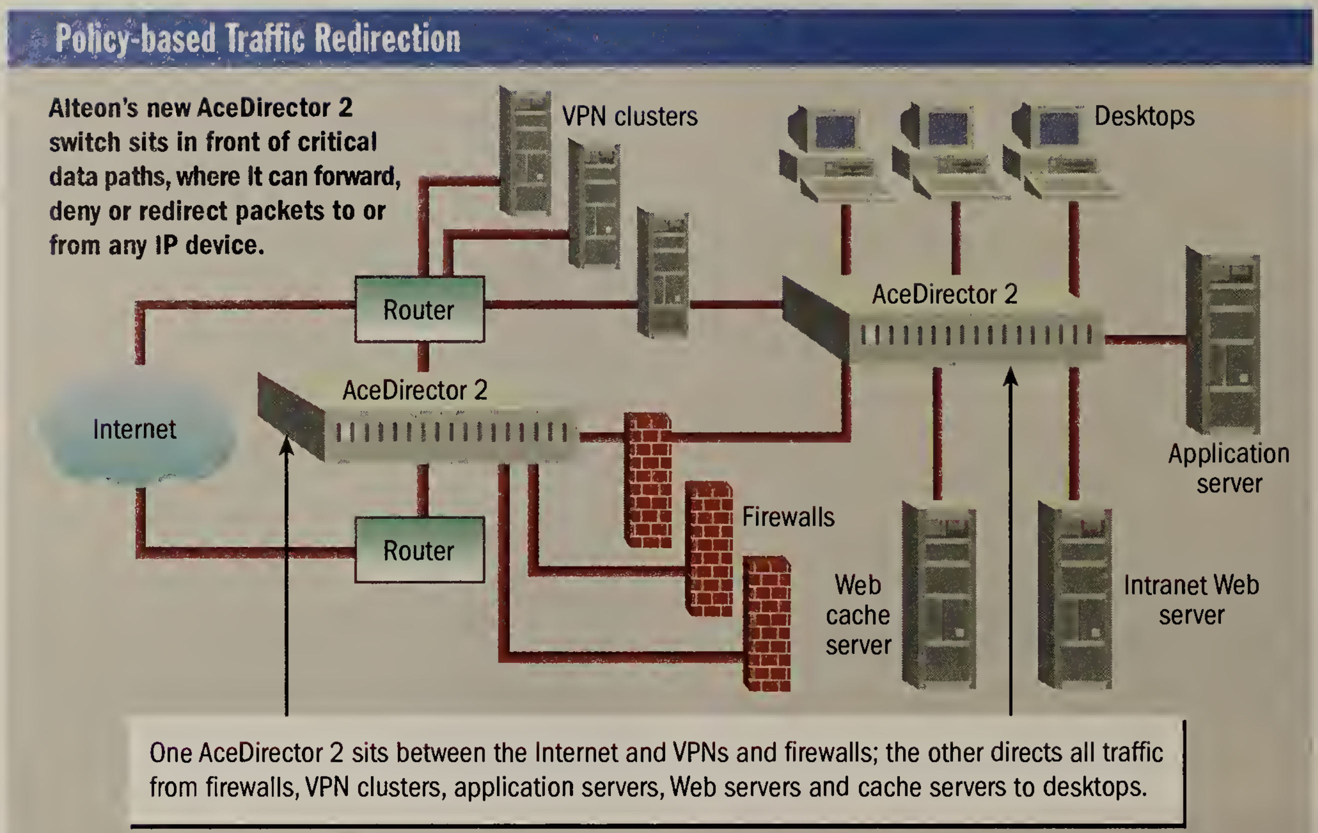
Alteon switches

Continued from page 1

virtual IP address information in a Domain Name System (DNS) server. The switch watches for failed or overloaded servers by checking the status of connections at regular intervals defined by the user.

Up to 224 attributes can be set by the administrator. For example, an administrator might decide to bypass a firewall for a particular type of traffic, or send certain applications right to an applications server without going through any other devices.



Alteon's new AceDirector 2 switch sits in front of critical data paths, where it can forward, deny or redirect packets to or from any IP device.

One AceDirector 2 sits between the Internet and VPNs and firewalls; the other directs all traffic from firewalls, VPN clusters, application servers, Web servers and cache servers to desktops.

And since AceDirector is a multiport switch that can be meshed with routers, users can set up other switches and servers to create multiple redundant data paths to route around device or net failures.

Another central idea behind AceDirector is to offload the IP processing now done by firewalls, virtual private network server clusters and cache servers. Users can put that traffic on the Alteon box to reduce latency and improve net performance, said Peter Christy, principal analyst at Collaborative Research in Los Altos, Calif.

Similar to AceDirector 1, the new switch also can serve as a Web cache redirector, intercepting requests for data targeted at remote Web sites and funneling the requests to the most appropriate cache server. This feature can deliver better response times and reduces WAN bandwidth requirements. However, AceDirector 2 can support twice the number of TCP/IP sessions as the current model, sources said.

AceDirector 2 also differs from the early version because it can support any IP traffic, whereas AceDirector 1 was limited to FTP or HTTP sessions, sources said.

For Sunny Vanderbeck, CEO of DataReturn, a Web-hosting firm in Dallas, AceDirector 2 has the potential to save him hundreds of thousands of dollars. "In the past, just the installation costs of providing redundancy was $30,000 per customer," Vanderbeck said. Now, with AceDirector 2, he can spend about $11,000 per customer, the cost of one AceDirector 2, to provide redundancy.

Even better, because of the way the Alteon switch scales, it has dramatically cut his deployment time. "If a customer that had two servers called at 9 a.m. and said 'a tidal wave is coming, I need 10 more servers, and I need them by close of business,' we would be able to deliver that," Vanderbeck said.

DataReturn hosts about 1,000 Web sites such as those from Honeywell, Hawaii Blue Cross/Blue Shield, Olin Corp., Siemens Wireless and International Data Corp. India, according to Vanderbeck. (IDC is owned by International Data Group, the parent company of *Network World.*)

Available immediately, AceDirector 2 is priced at $10,995. The full suite of capabilities integrated into the new AceDirector 2 will also be available as a free software upgrade for AceSwitch 180 users.

Also next week, Microsoft Corp. is expected to announce that the delayed Windows NT 5.0 server package will support Jumbo Frames, Alteon's proprietary Ethernet technology. Jumbo Frames can be as large as 9,000 bytes, whereas standard Ethernet frames are limited to 1,500 bytes.

The idea is larger frames can handle bigger files in fewer frames, reducing overhead and boosting net performance.

Other companies, such as Compaq Computer Corp. and Digital Equipment Corp., have promised Jumbo Frames support. Alteon also has partnerships with hot Internet companies such as Inktomi Corp., which bundles the first AceDirector switch with its Web traffic server.

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Compaq

Continued from page 1

unit, to be headquartered in New England, will spearhead the company's bid to be the major player in networking. The East Coast move and details of the division are expected to be announced in several weeks.

Despite the bold move, Compaq doesn't plan to become a leader by challenging companies such as Cisco Systems, Inc. and 3Com Corp. product-for-product, Johnson said.

Rather, Compaq will pick and choose the gear it needs to ensure quality of service across LANs and WANs and to focus on key vertical markets such as manufacturing and finance.

Compaq also hopes to establish beachheads with ISPs by offering hardware that will let ISPs offer IP-based virtual private network services.

Part of Compaq's plan includes leading customers of Digital's Network Solutions Integration Services (NSIS) to the network promised land. Compaq bought Digital, including NSIS, earlier this year.

That means developing hardware and software that lets Digital users assign priorities to applications at the desktop and have the rest of the network give them the same priority.

"We have a Digital installed base, which we clearly want to pull forward and move into the concept of end-to-end communications at the application level," Johnson said.

To do that, Compaq will not need to develop ATM switching because Compaq has settled on Gigabit Ethernet for enterprise backbones, Johnson said. And Compaq has no interest in supplanting Cisco as the preeminent router maker. "We don't need to do anything that somebody else is really good at," he said.

Instead, Compaq will continue its philosophy of "buy if you can, build if you must." Other vendors already make many products that bear the Compaq label — including Compaq Gigabit Ethernet switches, which are made by Extreme Networks, Inc. "I only invent that which I cannot get on the outside. Anything we design and do is with the intent of setting us apart from other people," Johnson said.

STEVE BORNS

B.J. Johnson *is setting up "Compaq East."*

Ashok Kumar, an analyst with the Piper Jaffrey consultancy in Minneapolis, took a harsher view. He said Compaq has no unified vision for networking, and its strategy is a matter of "trying to stitch together different vendors. Nevertheless, there is a great opportunity here for the company on the vendor-integration side," Kumar said.

The office here, which Johnson calls Compaq East, represents Compaq's first major outpost outside Texas. Because Compaq has already pumped dry the talent in Houston and Austin, Johnson said he hopes to draw new expertise from the network-savvy local work force.

"It's analogous to moving to Silicon Valley," said Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy based in Washington, D.C. "There is a much more ready pool of people up in New England. Especially LAN people, which is what he was after."

Locating NAC here will also help smooth out Compaq's absorption of Digital's NSIS and provide a convenient spot to deal with Cabletron Systems, Inc., Johnson said. With its Digital purchase, Compaq inherited an NSIS obligation to buy $1.1 billion worth of gear from Cabletron over the next three years. Johnson said he will reveal next month that shopping list and whether the equipment will be labeled with Compaq or Digital logos (*NW,* June 29, page 1).

In the meantime, Johnson will move back into the same building, with his NAC group, which will include Compaq's remote access unit, formerly Microcom, Inc.; its network interface card business, formerly Thomas-Conrad; and its low-end switching unit, formerly Networth.

While Johnson's office is in the same building, and on the same floor, it has one key advantage: "It has a better view this time," he said.

Senior Editor Robin Schreier Hohman contributed to this report.

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ION

Continued from page 1

rier to a special Sprint service node. Using service management software from Bellcore, the node then does everything from delivering a local phone call across the street to providing wideband Internet access and videoconferencing.

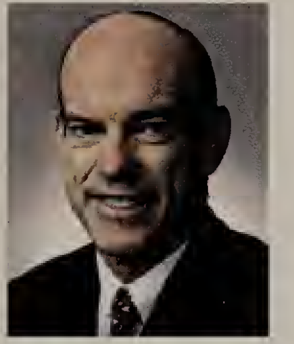
But because Sprint is not building its own local networks, Leon Kestenbaum, Sprint's vice president of federal regulatory matters, asked the FCC to rule that regional Bell operating companies' broadband digital access lines be subject to the same resale rules that apply to regular analog lines, meaning that they must be sold to competitors at a discount. For example, Kestenbaum warned that unless the FCC forces super-RBOC SBC Communications, Inc. to resell DSL lines at a discount, "Sprint would be foreclosed from using SBC's [asymmetric] DSL services altogether."

And while Sprint marketing and technology officials last week continued to insist that they plan to install their own DSL access equipment locally to reach ION customers if they can't obtain the lines from RBOCs, Kestenbaum virtually ruled out this option for the ION rollout.

"As a matter of simple economics, the alternative of buying unbundled copper loops and collocating Sprint's own xDSL equipment in [RBOC] central offices would be commercially infeasible in all but a handful of offices," Kestenbaum wrote. The cost of such a technique is high, construction times are significant and space is constrained in many central offices, he said.

Sprint's hesitation about the ION rollout bolstered the views of some analysts who have privately ridiculed ION as a crass publicity grab to counter aggressive new carriers' hype over IP convergence.

"That was the worst announcement I've ever seen," said one prominent analyst who asked not to be identified. "They claimed they were the only ones who could do this kind of thing, and then gave no details or proof." Ironically, Sprint's popular frame relay service has successfully migrated to a new class-of-service-based offering announced last year, the analyst added. But Sprint has failed to define a migration path from frame relay or any other service to the new ION services that would merge data traffic with voice and video.



Sprint *Chairman William Esrey*

Other analysts said Sprint was engaging in the time-honored practice among carriers of saying one thing on Wall Street and another in Washington. "The lawyers are saying that if there's no regulatory relief, there's no ION," said Frank Dzubeck, president of Communications Network Architects, Inc., a consulting firm in Washington, D.C. "And they're right. They will fail unless the government gives them relief for the last mile to the home."

Broadband bonanza

Sprint's filings were made in response to a growing movement in Washington to deregulate the RBOCs' broadband data operations, even before the RBOCs gain general authority to enter the long-distance business. All of the RBOCs except BellSouth Corp. have filed petitions asking the FCC to allow them to carry IP and other data traffic across their regions without the usual restrictions on local calling areas and requirements to offer their facilities to competitors such as Sprint.

The RBOCs' hook: a provision of the Telecommunications Act of 1996 that went almost unnoticed until this year. Called Section 706, it requires the FCC, within 30 months of enactment of the act, to promote broadband networks by dropping burdensome regulations on broadband networks, or at least have a proposal to do so. That deadline falls next month.

Not only Sprint, but AT&T, MCI Communications Corp. and the Commercial Internet Exchange Association, an ISP trade group, have opposed the Section 706 petitions. And the Association for Local Telecommunications Services, a competitive local exchange carrier (CLEC) trade group, has asked the FCC not only to deny the petitions but to affirmatively rule that RBOCs must resell their DSL and other broadband facilities at a discount.

The stakes are higher for Sprint than for its competitors. Unlike AT&T and MCI, Sprint is neither buying nor merging with a facilities-based CLEC, meaning it has to lease all of its local facilities except in those smaller markets where it owns some incumbent phone companies. As a result, Kestenbaum told the FCC that Sprint must "utilize the RBOCs' broadband capabilities to bring ION to market on a widespread basis." And that "depends to a significant degree" on the FCC's Section 706 decisions, he said.

Unfortunately for Sprint, FCC Chairman William Kennard has been receptive to the RBOCs' Section 706 petitions. "They have rightly asked, 'Why should we make this new investment if we simply have to turn around and sell this new service, or the capabilities of these advanced electronics, to our competitors?' " Kennard said in a recent speech.

Getting the story straight

For their part, Sprint officials were scrambling late last week to clarify their ION rollout plans, in advance of Sprint Chairman William Esrey's keynote address about ION to this week's Internet World show in Chicago.

Sprint has claimed "key network access agreements" for ION with SBC subsidiary Southwestern Bell plus BellSouth, Ameritech Corp. and GTE Corp. Jeff Anderson, Sprint's senior director of strategic development, last week said those agreements cover Broadband Metropolitan Area Networks (BMAN), which Sprint defines as fiber rings that run directly into user premises or are accessible over T-1 tail circuits.

But the BMAN agreements do not include DSL circuits, he said. And Anderson insisted that Sprint was still planning to install its own local DSL equipment. "By definition, under the architecture of ION, with the Service Node and Service Manager, we'd be able to take a dry copper loop and put the necessary DSL electronics on it."

Yet Sprint's filings also disclosed that the geographic availability of ION will be subject to advance customer demand. Kestenbaum said one reason why Sprint is reluctant to install its own central office DSL termination gear — known as DSL Access Multiplexers, or DSLAMs — is because it can't guarantee sales of ION services. "A DSLAM that can terminate roughly 500 loops would be grossly underutilized in an end office where Sprint has only one or two ION customers," Kestenbaum wrote.

John Hoffman, Sprint's senior vice president of external affairs, confirmed that Sprint will wait for demand to develop in an area before rolling out ION on a dial-up basis. But he added that Sprint officials hope corporate usage will spur clusters of telecommuters to take up the offerings. "If they have hundreds of employees who want the services, we'll move heaven and earth to serve those customers," Hoffman said.

Nevertheless, Hoffman, who oversees Sprint's regulatory affairs operation, said prospects for gaining ION dial-up local access at sufficient bandwidth is clouded in the regions of the four RBOCs with Section 706 petitions, which if granted would probably wipe out Sprint's ability to resell RBOCs' DSL lines. "Are we less optimistic with respect to those four [regions]? Sure," Hoffman said. Reminded that there are only five RBOCs left and asked if that therefore means Sprint is concerned about ION access in most of the country, Hoffman answered "Yes, a good part of it." He added: "[The RBOCs] are exhibiting anticompetitive tendencies, and that makes us very uncomfortable."

However, Hoffman said large businesses should look first to the BMAN fiber circuits that Sprint is leasing from some local carriers, and Sprint is still considering alternatives to DSL resale, including cable lines, power lines and wireless loops. And despite the documents that seemed to rule out collocating Sprint multiplexers in RBOC central offices, Hoffman backed the statement of Sprint's strategic development director that such a method was indeed feasible. "Even if some of the Bell companies are absolutely obstinate, we've still got the ability to buy unbundled loops and condition them ourselves," Hoffman said.

Esrey originally announced that ION services would go into beta test with selected commercial customers later this year and would become generally available to businesses in mid-1999, with residential availability late in 1999. "But Sprint has a way out," Dzubeck said. "Esrey didn't say how many [ION circuits] he's going to put in — and where." ■

SO WHICH IS IT?

Sprint's marketing and legal officials are telling different stories about Sprint's local-loop strategy:

Jeff Anderson, senior director of strategic development

"By definition, under the architecture of ION . . . we'd be able to take a dry copper loop and put the necessary DSL electronics on it."

Leon Kestenbaum, vice president of federal regulatory matters

"As a matter of simple economics, the alternative of buying unbundled cooper loops and collocating Sprint's own xDSL equipment in [RBOC] central offices would be commercially infeasible in all but a handful of offices."

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Backspin

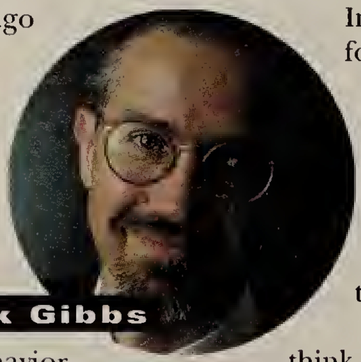
Quantum physics and cryptography

<joke>

Q: How does a Cray chicken cross the road?

A: Faster than any other chicken, but if you don't dip it in liquid nitrogen first, it arrives on the other side fully cooked.

</joke>



Mark Gibbs

I wrote some time ago about quantum computing ("Coffee: Driving the computer industry now or in the future?," July 7, 1997). Quantum computing is a new technology that relies on the bizarre behavior of single atoms, and it promises to make incredibly fast computers.

I say bizarre because using atoms as computational elements means you're no longer dealing with bits that are either on or off (a one or a zero). You're now dealing with qubits, quantum bits that can be in both states simultaneously, meaning three qubits can represent a total of eight states all at the same time.

Weird? You betcha. And it gets worse because we have to throw in a whole load of deeply strange ideas that you don't want to deal with until at least your second cup of coffee. If ever.

<joke>

Q: How does a quantum logic chicken cross the road?

A: The chicken is distributed probabilistically on all sides of the road until you observe it on the side of your choice.

</joke>

I read in the July 5 "Educom Edupage" newsletter (www.educom.edu) that *Business Week* reported the following:

Researchers at Yale University have created an ultrafast, single-electron transistor that could lead to the development of "quantum" computers the size of a thumbtack with supercomputer powers. The breakthrough involves inducing a tiny part of the transistor to "resonate" with the arrival of each electron. That resonance creates a way to track each electron and gives an extra push to the electrons as they're moving through the switch, making it 1,000 times faster than any previous device.

Just think of the possibilities! We're almost up to processors with 500-MHz clocks, so this potentially could give us a 50-GHz clock rate. Wow.

Imagine what this means for cryptography. Forget Triple DES encryption with 1,024-bit keys. Once you have a quantum computer, protecting your data with multimegabit keys will be the order of the day.

But most important, think what this means to the government, which wants to control the use of cryptography. We have committees trying to figure out how to create encryption the government can break, and technology is moving faster than they can deliberate.

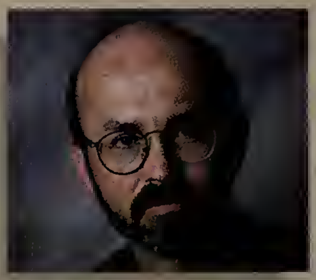
Even without superprocessors, their efforts are being defeated. I recently read in the most excellent "Tasty Bits from the Technology Front" (www.tbtf.com) that Ron Rivest has created a new privacy method called "chaffing and winnowing": "Rivest's scheme allows two people who share an authentication key to achieve high levels of confidentiality without using encryption at all."

I find it interesting that in so many areas of trying to politicize technology, the government is neither smart enough nor agile enough to have much effect. Cryptography is just one area. Just consider Internet gambling or taxing online shopping.

How long will it take the government to realize that unless it changes how it does business, it is simply going to waste time and effort while computer technology runs past it. Who knows, perhaps with all that power we will be able to build real thinking machines and create a congressional artificial intelligence. Wait a minute . . . isn't that an oxymoron?

Squawk to nwcolumn@gibbs.com or at (800) 622-1108, Ext. 7504.

'NET BUZZ



The latest on the Internet/intranet industry

By Chris Nerney

THROW A ROCK, HIT AN INTERNET VISIONARY In Hollywood, every two-bit producer or director with a lame sitcom on **Fox** is called — or, more accurately, calls himself — a genius.

Apparently those same stringent standards apply in cyberspace, where any geek who scares up some venture capital and a Web site with frames is accorded the status of "Internet visionary."

Hyperbole, you say? Well, see how many Internet visionaries you spot in this list: **Howard Rheingold, Dan Kalikow, Vint Cerf, Eric Schmidt, Mark Pesce, Seth Godin, Mark Weiser, Jason Smith, Terry Wilkinson, Darek Milewski, John Perry Barlow, Justin Hall, Jim Everett, Robert L. Raisch, Matthew Huff, David Chaum, Paul Mockapetris, Alexander Crosett, Larry Ellison, Kim Polese, Shel Kaphan, David Dorman, Moses Ma, Stephan Schambach, Esther Dyson, Andrew Busey.**

So how many of the 26 people listed have been called Internet visionaries? Every last one of them! And there's plenty more where they came from. If you don't believe us, just do an AltaVista search on the term. We did, and this is just a partial list of the names that search yielded.

Apparently, it's so easy to find Internet visionaries that organizers of a one-day conference last spring in Delaware promised an "Internet visionary panel," even though only one visionary — **Amazon.com Vice President Shel Kaphan** — had been confirmed. ("Hey Phil, go down to that there cybercafe and round us up some Internet visionaries.")

And nobody does the visionary thing like **Mark Pesce,** co-creator of Virtual Reality Modeling Language (VRML). Pesce appears to have had "Internet visionary" surgically grafted on to his name. A search of the exact phrase "Mark Pesce is an Internet visionary" yields 17 hits alone.

For our money, there are only two true visionaries on the above list — everyone else is either a high-tech entrepreneur, a smart person or both.

The first is **Vint Cerf,** the so-called Father of the Internet. The second is **Justin Hall.**

Hall isn't touting a portal, he hasn't formed a start-up and he doesn't have stock options. (Actually, we're not even sure he has a place to live these days.) But in 1994, at age 19, he saw the promise of the World Wide Web as a vehicle for expressing yourself and communicating with other people, not for getting rich. Here's some of what he wrote in 1995:

"Culture doesn't come from **Warner Brothers** and **Sony.** Culture is that woman friend of yours who tells the most outrageous stories . . . Culture doesn't cost big bucks and hang in a gallery of modern art. Culture is your friend who likes to draw. . . .

"Don't wait for anyone to recognize your talent; do what you love, and do it online."

That, to us, represents the true potential of the Internet. Although some venture funds wouldn't hurt.

EXTENSITY EXTENDS ITS ROLE We knew Web-based enterprise business applications start-up **Extensity, Inc.** was hot earlier this year when it managed to draw **Sun CEO Scott McNealy** and **Kleiner Perkins Caufield & Byers (KPCB)** kingpin **John Doerr** to its coming-out party. After all, some start-ups have to offer a free buffet just to get their own CEOs to show up at the company launch.

However, Extensity, founded less than a year ago, quickly has become one of the most high-profile Java start-ups around.

Now the company has landed a $14 million second round of financing, set to be announced today, from several investors, including KPCB's Java Fund.

Lead investor in the new round is **Visa International,** along with **Lehman Brothers, Sumitomo Corp. of America** and **Techno-Venture Company, Ltd.** They join a number of original investors, including the **Java Fund, Hummer Winblad Venture Partners** and **Weiss, Peck & Greer Venture Partners.**

Based in Emeryville, Calif., Extensity develops Web-based enterprise applications designed to manage operational costs. Its first product, Expense Reports, was released in January.

We would be remiss not to mention that Network World *Editor in Chief John Gallant also is an Internet visionary. Don't you be remiss by failing to send us your best Internet- and intranet-related news. Contact Chris Nerney at (508) 820-7451 or cnerney@nww.com.*

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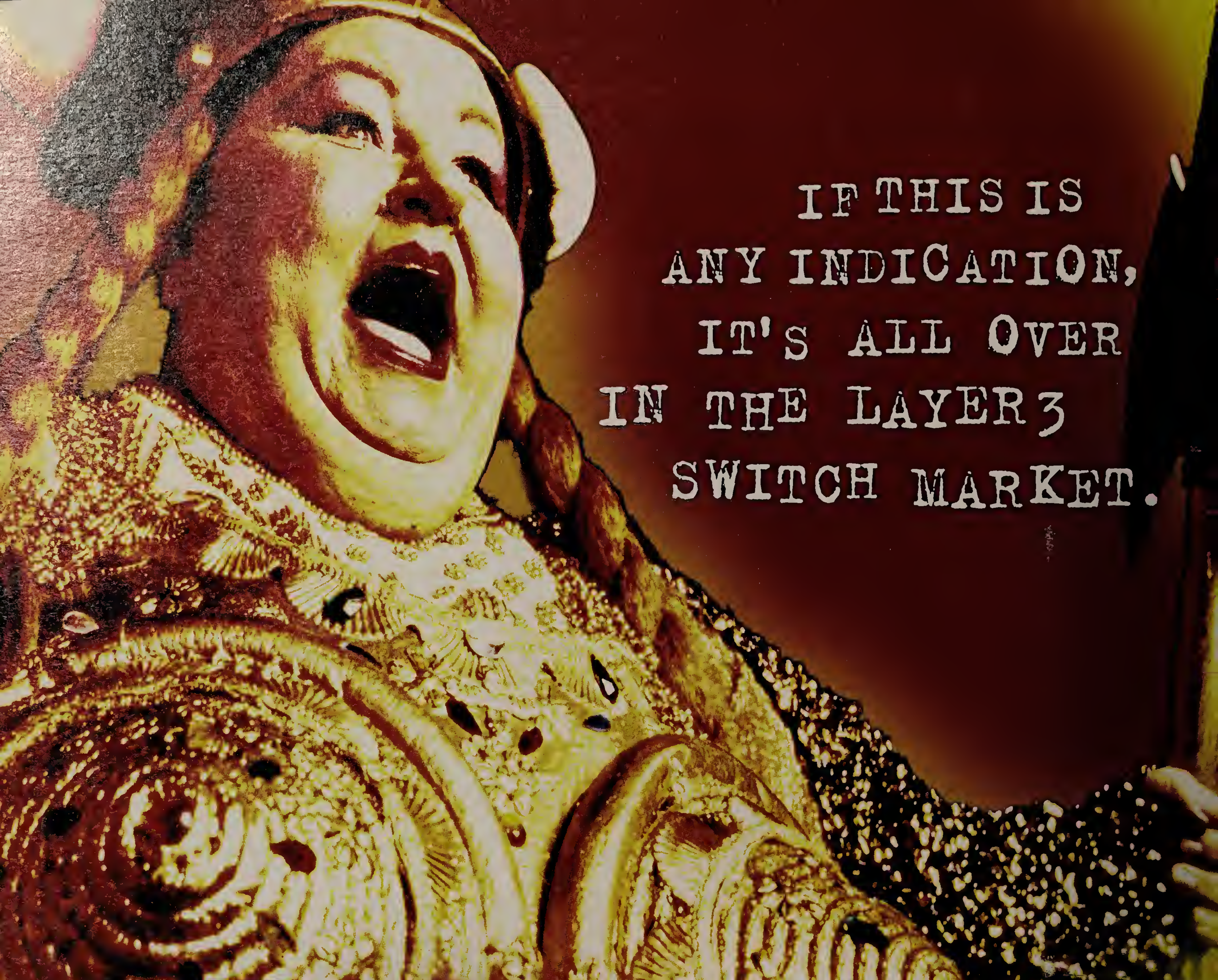

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